Vol. 993 Number 4

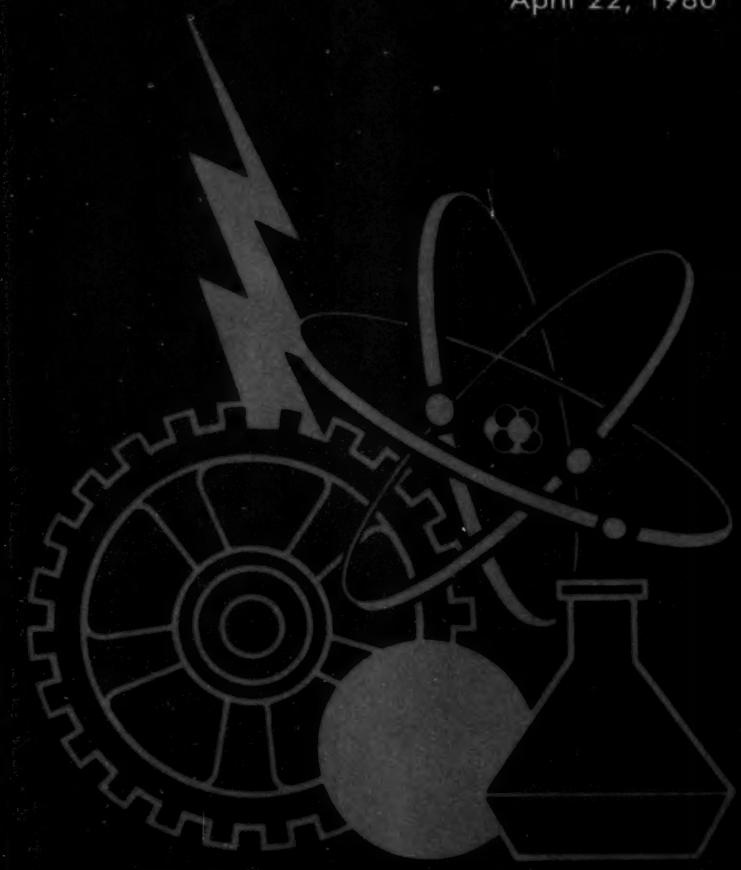
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 22, 1980



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

April 22, 1980 Volume 993 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

Forms Booklet Available

A new publication titled "Patent and Trademark Forms Booklet" dated October 1979 is now available from the Superintendent of Documents. The price is $12.00 and the stock number is 003–004–00569–6.

The booklet contains forms for use by the public in both patent and trademark cases. The booklet is printed on 8½ by 11 inch paper and is designed for use as a full size master copy for copying. It includes 52 English language forms (oaths, declarations, etc.) for use in patent cases, 69 non-English language forms for use under 37 CFR 1.69 situations in patent cases, 3 forms for use in international applications filed under the Patent Cooperation Treaty, and 70 forms for use in trademark cases.

Orders should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

SIDNEY A. DIAMOND,
Dated: Mar. 26, 1980. *Commissioner of Patents and Trademarks.*

Department of the Treasury
United States Customs Service

(TMK–2–RRUEE)

NOTICE OF APPLICATION FOR RECORDATION OF TRADE NAME
HOUSEWORKS, LTD.

Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name HOUSEWORKS, LTD. used by Houseworks, Ltd., a corporation organized under the laws of the State of Georgia, located at 3937 Oakcliff Industrial Court, Atlanta, Ga. 30340.

The application states that the trade name is associated with doll house accessories and miniature furniture.

The application states further that various firms located in Canada, England, West Germany, France and Switzerland are authorized to sell merchandise bearing the trade name. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Washington, D.C. 20229, in time to be received not later than 30 days from the date of publication of this notice in the FEDERAL REGISTER.

Notice of the action taken on the application for recordation of the trade name will be published in the FEDERAL REGISTER.

SALVATORE E. CARAMAGNO,
Dated: Mar. 19, 1980. *Acting Director, Office of Regulations and Rulings.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,404,485, Re. S.N. 105,477, Filed Dec. 20, 1979, Cl. 49/349, MOTOR DRIVEN WINDING MECHANISM FOR MOTOR VEHICLE WINDOWS, Cyril Henderson, et al., Owner of Record: *Smith Industries Limited, London, England,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 352

3,589,260, Re. S.N. 116,069, Filed Jan. 28, 1980, Cl. 354/293, ADJUSTABLE CAMERA MOUNT, Michael Anthony Ferra, Owner of Record: *Inventor,* Attorney or Agent: Robert Berliner, et al., Ex. Gp.: 211

3,781,169, Re. S.N. 103,492, Filed Dec. 14, 1979, Cl. 8/34, DISPERSING AND STABILIZING AGENTS FOR DYESTUFFS, Reingold Deubel, et al., Owner of Record: *Hoechst Aktiengesellschaft, Frankfurt, Germany,* Attorney or Agent: Barry Evans, Ex. Gp.: 144

3,911,542, Re. S.N. 115,772, Filed Jan. 28, 1980, Cl. 407/76, ADJUSTABLE TOOL UNIT, Ernest J. Friedline, et al., Owner of Record: *Kennametal Inc., Latrobe, Pa.,* Attorney or Agent: Lawrence R. Burns, Ex. Gp.: 324

3,962,897, Re. S.N. 118,593, Filed Feb. 4, 1980, Cl. 72/209, METAL WORKING APPARATUS AND METHODS OF PIERCING, Lewis A. Way, et al., Owner of Record: *Columbiana Foundry Company, Columbia, Ohio,* Attorney or Agent: Eugene F. Buell, et al., Ex. Gp.: 321

4,007,502, Re. S.N. 099,860, Filed Dec. 3, 1979, Cl. 5/338, BED FRAME ASSEMBLY, Frank Mis, Owner of Record: *Harris-Hub Company, Inc., Harvey, Ill.,* Attorney or Agent: Max Dressler, et al., Ex. Gp.: 355

4,039,612, Re. S.N. 112,807, Filed Jan. 15, 1980, Cl. 423/24, PROCESS FOR EXTRACTING COBALT, COPPER OR ZINC VALUES USING A 1-ALKYL SUBSTITUTED BENZIMIDAZOLE, Raymond Price, et al., Owner of Record: *Imperial Chemical Industries Limited, London, England,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 113

4,066,140, Re. S.N. 117,819, Filed Feb. 1, 1980, Cl. 177/134, HEAVY DUTY INDUSTRIAL SCALE, Fred Miller Conley, Owner of Record: *Cooper Industries, Inc., Houston, Tex.,* Attorney or Agent: Robert L. Parker, et al., Ex. Gp.: 211

4,068,428, Re. S.N. 110,524, Filed Jan. 8, 1980, Cl. 52/202, INSULATION WINDOW, O. James Peterson, III, Owner of Record: *Inventor,* Attorney or Agent: B. Franklin Griffin, Jr., Ex. Gp.: 354

4,068,550, Re. S.N. 113,033, Filed Jan. 17, 1980, Cl. 83/471.2, FOLDABLE BENCH FOR A PORTABLE HAND-HELD CIRCULAR SAW, Edward L. Gray, et al., Owner of Record: *Edward L. Gray, Orange County, N.C.,* Attorney or Agent: Charles M. Leedom, Ex. Gp.: 323

4,071,838, Re. S.N. 115,610, Filed Jan. 28, 1980, Cl. 338/47, SOLID STATE FORCE TRANSDUCER AND METHOD OF MAKING SAME, Barry Block, Owner of Record: *Diax Corporation, Sunnyvale, Calif.,* Attorney or Agent: Harry E. Aine, Ex. Gp.: 213

4,093,213, Re. S.N. 112,888, Filed Jan. 17, 1980, Cl. 272/118, VARIABLE RESISTANCE LIFTING MECHANISM, Charles Milton Coker, et al., Owner of Record: *Paramount Health Equipment Corp., Los Angeles, Calif.,* Attorney or Agent: M. John Carson, et al., Ex. Gp.: 334

4,093,845, Re. S.N. 105,570, Filed Dec. 20, 1979, Cl. 219/132, CONTROLLER FOR DC ARC WELDING GENERATORS, Nelson Hairgrove, Sr., Owner of Record: *Central Welding Supply Company, Houston, Tex.,* Attorney or Agent: Rodney K. Caldwell, et al., Ex. Gp.: 213

4,094,053, Re. S.N. 098,627, Filed Nov. 29, 1979, Cl. 29/420, FORGING PROCESS, Elbert K. Weaver, Owner of Record: *Wyman-Gordon Company, Worcester, Mass.,* Attorney or Agent: Norman S. Blodgett, Ex. Gp.: 321

4,119,362, Re. S.N. 110,355, Filed Jan. 7, 1980, Cl. 350/96.18, OPTICAL FIBER CONNECTOR UTILIZING OPPOSED LENSES, Melvyn A. Holzman, Owner of Record: *The Deutsch Company, Electronic Components Division, Banning, Calif.,* Attorney or Agent: Richard F. Carr, et al., Ex. Gp.: 257

4,123,260, Re. S.N. 114,034, Filed Jan. 21, 1980, Cl. 75/117, SELECTIVE RECOVERY OF NICKEL AND COBALT OR COPPER AND ZINC FROM SOLUTION, Verner B. Sefton, et al., Owner of Record: *Sherritt Gordon Mines Limited, Toronto, Ontario, Canada,* Attorney or Agent: Robert F. Delbridge, et al., Ex. Gp.: 111

4,154,466, Re. S.N. 112,061, Filed Jan. 14, 1980, Cl. 285/334, PIPE SECTION AND COUPLING, Billy P. Simmons, Owner of Record: *Centron Corporation, Dallas, Tex.,* Attorney or Agent: Gerald G. Crutsinger, et al., Ex. Gp.: 353

4,157,101, Re. S.N. 114,859, Filed Jan. 24, 1980, Cl. 138/130, HOSE STRUCTURE, John Alexander Ross, Owner of Record: *The Goodyear Tire & Rubber Co., Akron, Ohio,* Attorney or Agent: David M. Ronyak, et al., Ex. Gp.: 243

4,157,337, Re. S.N. 118,768, Filed Feb. 5, 1980, Cl. 260/448.2 E, PROCESS FOR THE POLYMERIZATION OF CYCLIC DIORGANOPOLYSILOXANES WITH CATION-COMPLEX CATALYSTS, Edwin R. Evans, Owner of Record: *General Electric Company, New York, N.Y.,* Attorney or Agent: John L. Young, et al., Ex. Gp.: 117

PATENT NOTICES

Certificates of Correction for the Week of April 22, 1980

Re. 29,960	4,160,925	4,172,110	4,180,027
D. 253,540	4,161,292	4,172,174	4,180,164
3,961,665	4,161,641	4,172,892	4,180,242
3,975,817	4,162,531	4,172,929	4,180,760
3,990,140	4,164,061	4,173,065	4,180,809
4,038,899	4,165,517	4,173,078	4,181,230
4,068,782	4,168,469	4,173,480	4,181,793
4.099,612	4,168,913	4,173,618	4,182,287
4,105,586	4,168,998	4,174,092	4,182,396
4,106,477	4,169,023	4,175,027	4,182,501
4,132,770	4,169,028	4,175,464	4,182,796
4,148,782	4,169,435	4,175,975	4,182,916
4,148,807	4,169,696	4,176,202	4,182,961
4,150,606	4,169,761	4,176,555	4,183,298
4,151,108	4,169,933	4,176,859	4,183,559
4,154,804	4,170,307	4,176,886	4,183,837
4,155,445	4,170,649	4,176,961	4,183,872
4,156,921	4,171,035	4,177,685	4,183,878
4,158,928	4,171,459	4,177,785	4,184,587
4,158,934	4,171,581	4,178,633	4,184,704
4,159,353	4,171,816	4,179,514	4,186,368
4,160,829	4,171,902	4,179,708	

Patents Available for Licensing or Sale

4,179,080. IMPROVED DOLLY. Henry A. Patnaude, 831 Los Moldinos Way, Sacramento, Calif. 95825.

4,000,767. LEVERAGE SCREWDRIVER. Jerome F. Geng, 94 Hillside Court, Fox Lake, Ill. 60020.

4,100,905. FUEL VAPORIZER. Joe M. Nolan, Box 1263, Longview, Tex. 75606.

4,172,501. SELF PROPELLED CAGE WHEEL TRACTOR. Roger L. Murray, 3938 Shimer Road, Marysville, Calif. 95901.

4,132,001. DIRECT READING RADIUS GAUGE. Konrad Petrik, 205 Meadowlawn Road, Cheektowaga, N.Y. 14225.

The following patent is available for licensing or sale. Correspondence to: Karl Hou, 29 East Maple St., Teaneck, N.J. 07666.

4,144,041. ADJUSTABLE THROAT VENTURI SCRUBBER.

The following patents are offered by Sargent-Welch Scientific Company, 7300 North Linder Ave., P.O. Box 1026, Skokie, Ill. 60077.

3,103,073. INSTRUCTOR SYSTEM.
3,123,920. INSTRUCTION SYSTEM.
3,274,703. TEACHING MACHINES.
3,545,100. SELECTO-MECHANISM.
3,608,208. TEACHING MACHINES.
4,043,054. TEACHING MACHINES.

General Electric Company is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patents should be addressed to: Patent Counsel Drive Systems Department, General Electric Company, 1501 Roanoke Blvd., Salem, Va. 24153.

3,207,339. CONTROL APPARATUS.
4,019,105. CONTROLLED CURRENT INDUCTION MOTOR DRIVE.

Applications for license may be addressed to: Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

4,175,615. PIPE HEADER-CYLINDRICAL TANK JOINT AND METHOD OF JOINING SAME.

Application for license should be addressed to: Group Patent Counsel, Lighting Business Group, General Electric Company, Nela Park, Cleveland, Ohio 44112.

3,968,398. FUSED DECORATIVE STRING SET.
3,944,961. MECHANICALLY IMPROVED CONTACTS FOR RADIATION SWITCHES HAVING MATERIAL THAT CONVERTS FROM ELECTRICALLY NON-CONDUCTIVE TO CONDUCTIVE.
3,951,582. SWITCHING DEVICES FOR PHOTOFLASH UNIT.
3,957,694. RADIATION CURABLE INKS.
3,968,056. RADIATION CURABLE INKS.
3,969,065. SWITCHING DEVICES FOR PHOTOFLASH UNIT.
3,969,066. SWITCHING DEVICES FOR PHOTOFLASH UNIT.
3,969,067. PHOTOFLASH LAMP.
3,972,673. PHOTOFLASH LAMP.
3,974,304. METHOD OF MAKING A VOLTAGE RESPONSIVE SWITCH.
3,976,811. VOLTAGE RESPONSIVE SWITCHES AND METHODS OF MAKING.
3,988,647. METHOD FOR MAKING A CIRCUIT BOARD AND ARTICLE MADE THEREBY.
3,989,644. RADIATION CURABLE INKS.
3,990,832. SWITCHING DEVICES FOR PHOTOFLASH UNIT.
3,990,833. SWITCHING DEVICES FOR PHOTOFLASH UNIT.
3,994,664. PARALLEL ELECTRICAL SWITCHES.
4,013,848. SPRING SHORTING MEANS FOR PHOTOFLASH ARRAY.
4,015,028. METHOD FOR FORMING AN IMPROVED CONTACT FOR A RADIATION SWITCH.
4,015,093. PHOTOFLASH ARRAY HAVING ELECTRICAL SHORTING MEANS.
4,019,043. PHOTOFLASH LAMP ARRAY HAVING SHIELDED SWITCHING CIRCUIT.
4,028,798. METHOD OF MAKING ELECTRICAL CONNECTIONS.
4,036,578. PHOTOFLASH ARRAY AND METHOD OF CONSTRUCTION.
4,039,273. PHOTOFLASH LAMP PROVIDING AFTERFLASH SHORTING.
4,040,777. FLASH LAMP ARRAY HAVING SHORTING LAMPS.
4,041,300. PHOTOFLASH ARRAY WITH DISCHARGE PATH FOR ELECTROSTATIC CHARGES.
4,045,712. VOLTAGE RESPONSIVE SWITCHES AND METHODS OF MAKING.
4,047,015. PHOTOFLASH ARRAY CONSTRUCTION.
4,048,487. LAST-FLASH INDICATOR SWITCH IN PHOTOFLASH ARRAY.
4,048,716. METHOD OF MAKING ELECTRICAL CONNECTIONS.
4,049,844. METHOD FOR MAKING A CIRCUIT BOARD AND ARTICLE MADE THEREBY.
4,051,359. ELECTRIC MULTIPLE FLASH ARRANGEMENT.
4,053,757. PHOTOFLASH LAMP ARRAY HAVING RADIATION SWITCHES AND FLASH INDICATORS.
4,060,721. PHOTOFLASH LAMP ARRAY HAVING CONDUCTIVE REFLECTOR.
4,064,431. LAST-FLASH INDICATOR FOR PHOTOFLASH ARRAY.
4,080,155. SWITCHING DEVICES FOR PHOTOFLASH UNIT.
4,088,801. U.V. RADIATION CURABLE ELECTRICALLY CONDUCTIVE INK AND CIRCUIT BOARDS MADE THEREWITH.
4,093,979. MULTIPLE FLASH ARRAY.
4,097,220. FLASH LAMP ARRAY HAVING SHORTING LAMPS.
4,101,953. MULTIPLE FLASHLAMP ARRAY.
4,104,705. PHOTOFLASH LAMP ARRAY HAVING SHIELDED SWITCHING CIRCUIT.
4,104,706. PHOTOFLASH LAMP ARRAY HAVING CONDUCTIVE REFLECTOR.
4,105,480. FLASHLAMP COMPOSITION.
4,118,758. PHOTOFLASH LAMP ARRAY HAVING HIGH VOLTAGE SHORTING TYPE FLASH LAMPS AND RADIATION SENSITIVE SWITCHING ELEMENTS.

4,128,858. MULTIPLE FLASHLAMP SYSTEM.
4,133,023. FLASH LAMP ARRAY HAVING ELECTRICAL SHIELD.
4,133,631. PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING RADIATION SENSITIVE FUSE ELEMENTS.
4,136,375. SHIELD CONNECTION IN PHOTOFLASH ARRAY.
4,136,376. PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING ELECTRICAL INSULATION.
4,136,378. PHOTOFLASH LAMP ARRAY HAVING REFLECTOR AT REAR OF TRANSPARENT CIRCUIT BOARD.
4,136,379. PHOTOFLASH LAMP ARRAY HAVING REFLECTIVE CIRCUIT BOARD.
4,146,917. PHOTOFLASH LAMP ARRAY HAVING REFLECTIVE COATING MEANS.
4,166,287. PHOTOFLASH LAMP ARRAY.
4,167,773. PHOTOFLASH LAMP ARRAY HAVING CONTOURED SHEET SHIELD.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

CHIEF, INTELLECTUAL PROPERTIES DIVISION

OTJAG, DEPARTMENT OF THE ARMY

Room 2D/444, Pentagon, Washington, D.C. 20310

Patent application 6-004,636. Early-Late Gate. Filed Jan. 19, 1979.

Patent application 6-056,581. Chemical Protective, Fire Resistant Composition. Filed July 11, 1979.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half Street, SW., Washington, D.C. 20324

Patent 4,168,470. Two-Bit A/D Conversion Apparatus without a Signal Derived Automatic Gain Control. Filed Feb. 15, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,500. Method and System for Moving Target Elimination and Indication Using Smoothing Filters. Filed Mar. 10, 1972. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,908. Precision Pointing and Tracking Control System. Filed Dec. 30, 1977. Patented Sept. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements & Patent Branch, Administrative Service Division, Federal Bldg., Science & Education Administration, Hyattsville, Md. 20782

Patent application 6-076,540. Prevention of Damage to Falling Fruits and Vegetables. Filed Sept. 18, 1979.

Patent 4,167,447. Method for Insolubilizing Enzymes on Chitosan. Filed Mar. 24, 1978. Patented Sept. 11, 1979. Not available NTIS.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Room W513, 401 M Street, SW., Washington, D.C. 20460

Patent application 881,980. Distributing Fluids Into Fluidized Beds. Filed Jan. 16, 1978.

Patent application 953,147. Converting Calcium Sulphide to Calcium Oxide. Filed Oct. 17, 1978.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents,
18th and C Streets, NW., Washington, D.C. 20240

Patent application 6-047,542. Process for Directly Producing Anhydrous Aluminum Sulfate from Aluminum Sulfate Solution. Filed June 11, 1979.

Patent application 6-056,151. Production of Alumina from Aluminum Nitrate Solutions. Filed July 10, 1979.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-066,271. Frequency Comparator for Electronic Clocks. Filed Aug. 13, 1979.

Patent 4,156,761. Room Temperature Cured Elastomer. Filed Aug. 24, 1978. Patented May 29, 1979. Not available NTIS.

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA CODE GP-2, Washington, D.C. 20546

Patent 4,165,460. Coal-Rock Interface Detector. Filed Nov. 4, 1977. Patented Aug. 21, 1979. Not available NTIS.

NS0-114,697. One Step Dual Purpose Joining Technique. Aug. 30, 1979.

Patent application 6-061,556. Self-Calibrating Threshold Detector. Filed July 27, 1979.

Patent application 727,444. Continuous Coal Processing Method and Means. Filed Sept. 28, 1976.

Patent application 900,659. Molten Salt Pyrolysis of Latex. Filed Apr. 27, 1978.

Patent 4,033,133. Start Up Systems for Hydrogen Generator Used with an Internal Combustion Engine. Filed Mar. 22, 1976. Patented July 5, 1977. Not available NTIS.

Patent 4,167,111. Borehole Geological Assessment. Filed May 4, 1978. Patented Sept.11, 1979. Not available NTIS.

Patent 4,168,287. Compound Oxidized Styrylphosphine. Filed May 19, 1978. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,483. System for Detecting Substructure Microfractures and Method Therefore. Filed Sept. 6, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,706. Portable Breathing System. Filed Mar. 24, 1977. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,168,718. Passive Propellant Systems. Filed July 11, 1978. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,169,129. Sodium Storage and Injection System. Filed Feb. 24, 1978. Patented Sept. 25, 1979. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification. Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library. Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 23, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-9-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-3-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-2-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	5-30-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-31-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	11-16-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-16-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	8-21-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-20-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-14-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking: Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-5-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	1-15-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-18-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	10-2-78

Expiration of patents: The patents within the range of numbers indicated below expire during February 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,076,195 to 3,079,605, inclusive
Plant Patents..... Numbers 2,224 to 2,231, inclusive

REISSUES

APRIL 22, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

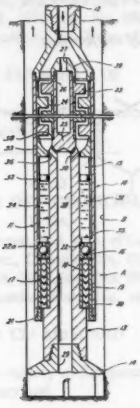
Re. 30,257
WELL DRILLING TOOL

Fred K. Fox, Houston, Tex., assignor to Engineering Enterprises, Inc., Houston, Tex.

Original No. 4,019,591, dated Apr. 26, 1977, Ser. No. 645,930, Dec. 31, 1975. Continuation-in-part of Ser. No. 584,964, Jun. 9, 1975, abandoned, and Ser. No. 546,006, Jan. 31, 1975, Pat. No. 3,971,450. Application for reissue Sep. 5, 1978, Ser. No. 939,908

Int. Cl.[2] E21B *3/12, 41/00*

U.S. Cl. 175—107 **50 Claims**



1. A well tool adapted to be connected as part of a pipe string through which drilling fluid is circulated, comprising inner and outer members defining an annular space therebetween having one end opening to the inside of the tool and another end opening to the outside of the tool, bearing means on the members within said space supporting them for rotation with respect to one another, motor means within said space for so rotating the members, means sealing between said members [for separating the fluid on the other side of said tool from that] within the said space [above the seal means], and a body of material within the space above the sealing means which [includes a metallic weighting substance which is liquid during drilling operations, said material having] *(a) comprises a liquid whose specific gravity is not substantially greater than that of the drilling fluid, but which is impregnated with metal particles whose specific gravity is substantially greater than that of the drilling fluid so that said material has* a specific gravity which is sufficiently greater than that of the drilling fluid and [being] *(b) which is* sufficiently insoluble with the drilling fluid, during drilling operations, that it substantially excludes drilling fluid [therefrom] *from the sealing means.*

Re. 30,258
DATA RECORDING CAMERA

Susumu Fujita, Kobe, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Original No. 4,001,850, dated Jan. 4, 1977, Ser. No. 624,020, Oct. 20, 1975. Application for reissue Apr. 13, 1978, Ser. No. 896,074

Claims priority, application Japan, Oct. 25, 1974, 49-123813

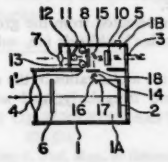
Int. Cl.[2] G03B *13/02, 17/24*

U.S. Cl. 354—106 **3 Claims**

1. In a camera comprising a film exposure system which includes an object lens system for focussing of image-wise light onto photosensitive film material provide in said camera and shutter means selectively movable to positions to permit or to prevent passage of said image-wise light onto said film material, a viewfinder system which is provided independently of said film exposure system and includes an eyelens permitting viewing of an object from which image-wise light may be directed by said object lens system onto said film material, and camera wall portions defining a film exposure system compartment and a viewfinder system compartment, the improvement comprising:

externally adjustable data specification means to selectively present different items of data,

first optical means for directing said image-wise light carrying said data content [to said eyelens, whereby said data content is viewable] *for viewing* in said viewfinder system *on said eyelens,*



second optical means for directing said image-wise light carrying said data content onto a portion of said film material, whereby said data content may be recorded on said film material, and

gate means operatively coupled to said shutter system and movable to closed position and open position *in relation with the movement of said shutter system,* said gate means being closed to prevent passage by said second optical means of said image-wise light *carrying said data content* onto said film material when said shutter means is closed *at the closed position,* and being opened to permit passage *by said second optical means* or *said* image-wise light *carrying said data content* onto said film material by said second optical means when said shutter means is opened *at the open position,* whereby content of said data specification means may be selectively recorded on said film material.

Re. 30,259
WATER-SOLUBLE THERMOSETTING RESINS AND USE THEREOF

Koichi Moriya, Shibukawa, and Iwao Honda, Maebashi, both of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

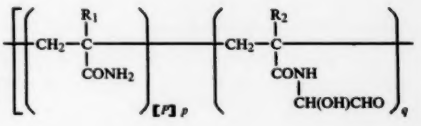
Original No. 4,122,071, dated Oct. 24, 1978, Ser. No. 833,048, Sep. 14, 1977. Application for reissue Feb. 23, 1979, Ser. No. 14,349

Claims priority, application Japan, Sep. 17, 1976, 51-110745

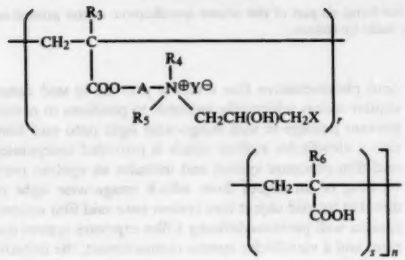
Int. Cl.[2] C08B *11/00, 15/00;* **C08F** *14/02;* **C08C** *19/12*

U.S. Cl. 162—167 **12 Claims**

1. A thermosetting resin of the formula



-continued



wherein:

R_1, R_2, [and] R_3 *and* R_6 are independently selected from the group consisting of hydrogen and a methyl group,

R_4 and R_5 are each an alkyl group having 1 to 3 carbon atoms,

A is an alkylene group having 2 to 6 carbon atoms,

X is selected from the group consisting of chlorine, bromine and iodine,

Y is an anion selected from the group consisting of nitrate ion, [chlorine] *chloride* ion, sulfate ion and phosphate ion,

p, q, r and s are molar ratios of the recurring units arranged linearly and irregularly, and are the whole numbers [which are] *having the relation of* $q/(p+q)=0.1-1.0$, $r/(p+q+r+s)=0.001-0.05$ and $s/r=0.5-1.5$; or $s=0$, $q/(p+q)=0.1-1.0$, $r/(p+q+r)=0.001-0.05$, and n is *a number of* about 100 to about 1000.

Re. 30,260

1-(2,6,6-TRIMETHYL-3-HYDROXY-1-CYCLOHEXEN-1-YL)-3-METHYL-PENTA-1,4-DIENE[OR 1-YN-4-EN]-3-OLS

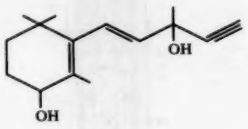
Michael Rosenberger, Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Original No. 4,098,827, dated Jul. 4, 1978, Ser. No. 759,703, Jan. 17, 1977. Application for reissue Mar. 2, 1979, Ser. No. 16,868

Int. Cl.[2] **C07C** *35/18*

U.S. Cl. 568—824 **1 Claim**

3. A compound of the formula:



PLANT PATENTS

GRANTED APRIL 22, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,522

DISTINCT VARIETY OF STREPTOCARPUS NAMED GRETA

Gerhard Fleischle, Vaihingen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 8, 1978, Ser. No. 958,831

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, S.T.C.3

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

4,523

DISTINCT VARIETY OF STREPTOCARPUS NAMED ILSA

Gerhard Fleischle, Vaihingen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 8, 1978, Ser. No. 958,833

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, S.T.C.1

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

4,524

DISTINCT VARIETY OF STREPTOCARPUS NAMED MARNA

Gerhard Fleischle, Vaihingen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 8, 1978, Ser. No. 958,834

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, S.T.C. 4

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

4,525

DISTINCT VARIETY OF STREPTOCARPUS NAMED OLGA

Gerhard Fleischle, Vaihingen, Fed. Rep. of Germany, assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 8, 1978, Ser. No. 958,947

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

PATENTS

GRANTED APR. 22, 1980

ERRATA

For CLASS	See PATENT NO.
433–008	4,198,753
433–129	4,198,754
433–126	4,198,755
222–326	4,198,756
035–010.4	4,198,762
521–055	4,198,792
368–037	4,198,808
368–080	4,198,809
368–239	4,198,810
368–292	4,198,811
433–136	4,198,977
415–115	4,199,295
415–181	4,199,296
430–226	4,199,354
430–226	4,199,355
430–126	4,199,356
430–270	4,199,357
430–308	4,199,358
430–308	4,199,359
430–503	4,199,360
430–508	4,199,361
430–218	4,199,362
430–512	4,199,363
204–015	4,199,408
548–201	4,199,506
548–218	4,199,507
548–143	4,199,508
585–500	4,199,533
423–210	4,199,549
430–111	4,199,614
252–103	4,199,648
370–050	4,199,660
370–091	4,199,661
370–085	4,199,662
370–085	4,199,663
455–077	4,199,721
375–027	4,199,722
455–108	4,199,723
455–344	4,199,724
455–212	4,199,725
367–135	4,199,746
340–695	4,199,761
455–129	4,199,782

PATENTS

GRANTED APR 22 1980

ERRATA

PATENTS

GRANTED APRIL 22, 1980

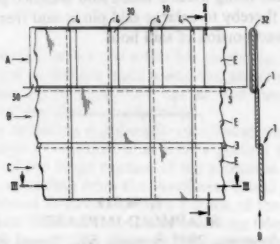
GENERAL AND MECHANICAL

4,198,707

SOFT PROTECTIVE CONSTRUCTION

Günter Haupt, Stadtbergen; Franz Fischer, Königsbrunn; Arthur Handtmann, Biberach an der Riss, and Erhard Bross, Freiburg, all of Fed. Rep. of Germany, assignors to ELTEKA Kunststoff-Technik GmbH, Biberach an der Riss and EBRO Elektrotechnische Fabrik, Freiburg, both of, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,209
Int. Cl.[2] F41H *1/02*
U.S. Cl. 2—2.5 **18 Claims**



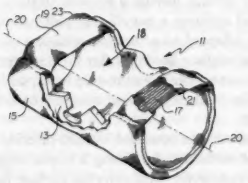
1. Soft protective construction for body protection, such as a bullet proof vest or shirt, with at least a double-layered bullet-stopping arrangement of mutually moveable rectangular or square protective plates, which can preferably be inserted in pockets (30, 32) in a carrier material, which in the outer layer lying on the bullet impact side consist of steel and at least in part-regions are ovelapped like scales, and which in the inner layer next to the body, are designed to absorb or largely destroy the impact energy of a striking bullet, characterized in that the protective plates of the inner layer (E) next to the body consist of a thick shock absorbing material, in particular a plastics material, such as polyamide, and for arrangement in a common plane are joined together in a form-locked manner along the horizontally orientated, meeting plate edges by slide joints (5) and along the vertically orientated and likewise meeting plate edges by rotating joints (6, 11, 16, 17, 22,23,24).

4,198,708

ELBOW/KNEE GUARD

Albert L. Fugere, 4901-17th Ave., Seattle, Wash. 98108, and Michael J. Kelly, 808 NE. 82nd, Seattle, Wash. 98115

Filed Jun. 21, 1978, Ser. No. 917,516
Int. Cl.[2] A41D *13/06, 13/08*
U.S. Cl. 2—16 **8 Claims**



1. An elbow/knee guard for use in athletics comprising:

a protective pad of resilient material having in outline two end edges joined by two longitudinal edges, said pad being sufficient in area and sufficiently flexible to cover the front part of the knee joint/outer part of the elbow joint, and the immediate surrounding area, but not the remainder of the joint, said longitudinal edges in said pad each having a cutout portion substantially intermediate thereof, wherein each cutout portion includes first and second cutout sections, the first cutout section being generally rectangular in shape and extending over approximately one-half of the length of the article and inward of the article approximately one-sixth of the width thereof, the second cutout section being generally keyhole-shaped and extending further inward of the article from said first cutout section about a line which is approximately midway between said two end edges, such that when said pad is curved about its longitudinal axis, as it is when the guard is in place on an elbow/knee, said pad may be flexed through a substantial arc about a line passing through the center of the cutout portions without distorting substantially said pad;

a cover which extends around and covers said pad and conforms substantially to the outline of said pad, forming a combination of said pad and said cover, wherein said combination is sufficiently wide that portions thereof cover portions of the limb on which the article is positioned above and below the joint; and

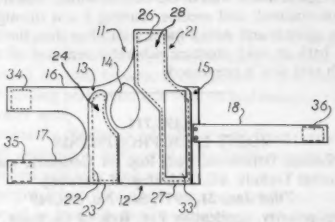
elastic strip means located at both longitudinal ends of the combination, extending between and secured to the longitudinal edges thereof, for maintaining said combination securely on the elbow/knee of the user during vigorous movement of the user, such as in athletic contests.

4,198,709

BOWLING GLOVE

Donald D. Clayton, 2426 8th Ave., North Great Falls, Mont. 59401

Filed Aug. 1, 1978, Ser. No. 929,922
Int. Cl.[2] A41D *13/10*; A63B *71/14*
U.S. Cl. 2—161 A **11 Claims**



1. A bowling glove including a wrist encircling portion, a palm portion extending from said wrist encircling portion and having a thumb receiving opening, a back of the hand portion extending from said wrist encircling portion and connected to the palm portion adjacent to said thumb opening, means for maintaining the free side of said palm portion which is remote from said thumb opening adjacent to the free side of said back portion which is remote from said thumb opening and for maintaining said wrist encircling portion in contact with itself, said palm portion extending toward the base of the fingers, said back portion extending toward the base of the fingers, an appendage portion extending from said back portion along the back of the index finger for substantially the entire length thereof, a first elongated pocket extending from an opening at the free edge of said wrist portion along said palm portion and partially around said thumb opening, a first thin bar member disposed with said first pocket along substantially the entire length thereof with one edge extending partially around said thumb opening, a second elongated pocket extending from an opening at the free edge of said wrist portion along the center of said back portion and offset along substantially the entire

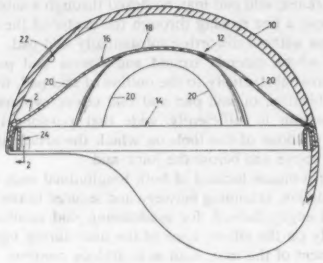
length of said appendage portion, and a second thin bar member disposed within said second pocket along substantially the entire length thereof, said second bar member having a transverse bend adjacent the wrist joint and a transverse bend adjacent the base of the index finger.

4,198,710

FASTENER FOR HELMET SUSPENSION

Charles C. T. Lamb, 33 Walker Rd., Willowdale, Ontario, Canada (M2N 2K2)

Filed Oct. 10, 1978, Ser. No. 949,651
Claims priority, application Canada, Oct. 11, 1977, 288421
Int. Cl.[2] A42B 3/00
U.S. Cl. 2—416 **6 Claims**



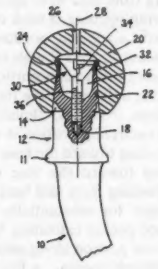
1. In a protective helmet having an inside wall within which is disposed a crown suspension having a central portion adapted to contact the top of a wearer's head, and having radially outwardly extending legs, means for attaching at least one of said legs to the inside wall comprising: a barb which is joined to said leg and which tapers in thickness from its juncture with the leg to its end; and a suspension engaging member formed on the inside wall of the helmet within which said barb is accommodated, said member having a slot through which said leg extends and which has a width less than the thickness of the barb at said juncture whereby removal of the barb through said slot is prevented.

4,198,711

JOINT ENDOPROSTHESIS

Anton Zeibig, Ottensoos, Fed. Rep. of Germany, assignor to Rosenthal Technik AG, Fed. Rep. of Germany

Filed Jun. 21, 1977, Ser. No. 808,449
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646478
Int. Cl.[2] A61F 1/24
U.S. Cl. 3—1.91 **11 Claims**



1. Joint endoprosthesis, comprising: an implantable shaft; said shaft having an end; a pin formed at said end of said shaft; said pin having a free end; said pin having a recess defined therein by the material of said pin and extending from said pin free end, and by means of said recess in said pin, the radial compressibility of said pin being increased in the zone of said pin through which said recess passes;

a pivot body having a hole defined by the material of said pivot body, and extending into said pivot body; said hole being shaped such that said pivot body is press fit onto and over said pin free end; said pin recess extending a distance along the length of and inside of said hole; said hole being widened at a widened portion thereof at the inner end thereof; said pin free end extends into said widened portion of said hole;

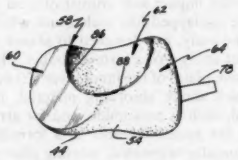
a wedging member, positioned in said hole at said free end of said pin and at said recess for being urged into said recess for spreading said pin at said free end thereof, thereby to secure said pin in said hole in said body; said wedging member being located inside said widened portion of said hole, thereby to enlarge said pin at said free end into said widened portion of said hole.

4,198,712

SCAPHOID IMPLANT

Alfred B. Swanson, 2945 Bonnell, SE., Grand Rapids, Mich. 49506

Continuation-in-part of Ser. No. 951,317, Oct. 13, 1978, abandoned. This application Mar. 19, 1979, Ser. No. 21,624
Int. Cl.[2] A61F 1/24
U.S. Cl. 3—1.91 **14 Claims**



1. An implant for replacement of the scaphoid bone and insertable surgically adjacent the trapezium, the trapezoid, the lunate, the capitate and the radius, said implant comprising:

a one-piece body of resilient material, said body defining:

an inferior surface of generally oval shape in plan and being slightly convex, the apex of said surface lying in substantially a single plane and defining a trapezium articulation and a trapezoid articulation;

a superior surface having a smooth slightly convex shape in plan and defining a curvilinear palmar edge, said superior surface adapted to articulate with the radius;

an internal surface having a flat lunate articulate facet and a deep concavity adjacent to said facet, said concavity being generally oval in plan and adapted to articulate with the capitate;

an external surface bounded by said inferior surface and said superior surface and defining a dorsal edge of said internal surface concavity, said external surface being smooth and generally convex in plan;

a posterior surface extending between said external surface and a proximal edge of said lunate articulate facet, said proximal edge being generally semi-circular in shape; and

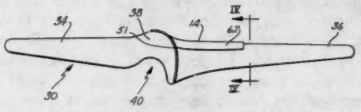
an anterior surface of generally triangular shape in plan including a base coincident with a proximal edge of said inferior surface and bounded by said lunate facet, said deep concavity and said superior surface.

4,198,713

PROTECTIVE MEMBER FOR IMPLANTABLE PROSTHESIS AND METHOD OF PROTECTING THE PROSTHESIS

Alfred B. Swanson, 2945 Bonnel, SE., Grand Rapids, Mich. 49506

Continuation-in-part of Ser. No. 731,825, Oct. 12, 1976, Pat. No. 4,158,893. This application Mar. 29, 1979, Ser. No. 24,955
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.91 **16 Claims**



1. A protective device for a flexible surgically implantable prosthesis used to replace bone joints, the prosthesis being of the type having a hinge portion and at least one outwardly directed stem; said device comprising:

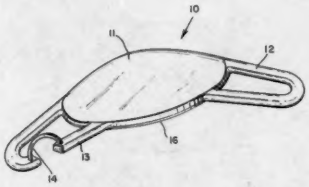
a member including a generally curvilinear shield portion configured to conform to at least a portion of the outer surface of the hinge portion of the prosthesis and a stem portion extending from the curvilinear shield portion and dimensioned to cover at least a portion of the top surface of the prosthesis stem, said member being fabricated from a material permitting reciprocation between the prosthesis stem and the member.

4,198,714

INTRAOCULAR LENS FOR IMPLANTATION INTO THE POSTERIOR CHAMBER OF A HUMAN EYE

Ronald P. Jensen, 4156 Dorset Pl., Flintridge, Calif. 91103

Continuation-in-part of Ser. No. 794,467, May 6, 1977, Pat. No. 4,110,848. This application Aug. 30, 1978, Ser. No. 938,225
Int. Cl.² A61F *1/16, 1/24*
U.S. Cl. 3—13 **5 Claims**



1. An intraocular lens for implantation in the posterior chamber of a human eye, said intraocular lens comprising:

a. a plano-convex lens, which is formed from an optical material that is suitable for an implantable lens, which is adapted to be inserted into the posterior chamber of the human eye within the capsular membrane thereof;

b. a first supporting loop, which is formed from a material that is suitable for implantation into the human eye, mechanically coupled to the peripheral edge of said plano-convex lens and disposed at an angle in the range of 0° to 25° to the plane surface of said plano-convex lens so that its end portion is below the plane surface of said plano-convex lens, said first supporting loop being adapted to secure said plano-convex lens rigidly and permanently in the posterior chamber of the human eye; and

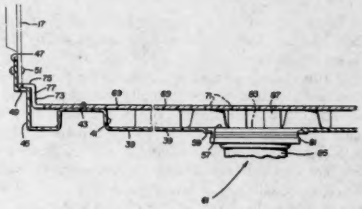
c. a second supporting loop, which is formed from a material that is suitable for implantation into the eye, mechanically coupled to the peripheral edge of said plano-convex lens and oppositely disposed to said first supporting loop, said second supporting loop being also disposed at an angle in the range of 0° to 25° to the plane surface of said plano-convex lens so that its end portion is below the plane surface of said plano-convex lens and having a third loop which is formed from a flexible material and which is mechanically coupled thereto between its end portion and the peripheral edge of said plano-convex lens so that a temporary securement to the iris of the human eye may be accomplished, said second supporting loop being also adapted to secure said plano-convex lens rigidly and permanently in the posterior chamber of the human eye.

4,198,715

SHOWER CABINET AND BASE

Phillip D. Daniels, Novi, Mich., assignor to Novi Plastics Company, Novi, Mich.

Filed Oct. 30, 1978, Ser. No. 955,975
Int. Cl.² A47K *3/22*
U.S. Cl. 4—146 **12 Claims**



12. A base adapted to mount a shower cabinet comprising:

a rectangular base plate mounted on and bearing against a floor;

a centrally disposed selectively usable first knock out drain disc formed in said base plate, providing a normally closed opening adapted to selectively receive a drain assembly;

an upstanding peripheral side wall on said base plate defining a water well;

an outwardly displaced peripheral side flange on said side wall defining a horizontal peripheral support shoulder between said side wall and flange;

an upright selectively usable second knock out drain disc formed in said side wall providing on removal an outlet opening;

a lateral drain pipe extending through said opening and connected to said base plate side wall communicating with said water well;

spacer means projecting upwardly from said base plate interiorly of said side wall;

a floor having a central drain nested within said base plate side walls and superimposed on said spacer support shoulder and over said means above said base plate to provide a water collection space within said well intermediate said floor and said base plate;

drain said water well being configured such that water accumulating in said well to a depth sufficient to define a water head for the lateral outletting of water through said lateral drain pipe;

an upstanding peripheral side wall extending around said floor cooperatively bearing against said base plate side walls;

a raised laterally extending peripheral flange on and around said floor bearing against said base plate shoulder;

the top surface of said floor along lines between diametric corners thereof being pitched downwardly towards said floor drain.

4,198,716

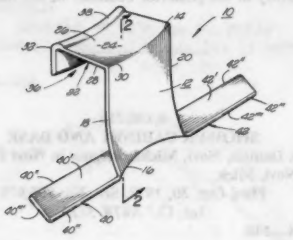
FEET SUPPORT ATTACHMENT FOR LAVATORIES

Hughlett Hollyday, III, 5028 Sunneyslope Ave., Sherman Oaks, Calif. 91423

Continuation-in-part of Ser. No. 795,487, May 10, 1977, abandoned. This application Jun. 1, 1978, Ser. No. 911,361

Int. Cl.[2] E03D *11/00*; A47C *7/50, 16/00*

U.S. Cl. 4—254 5 Claims



1. An improved unitarily fabricated feet support arrangement for a lavatory for utilization by a person sitting thereon, the lavatory of the type having a bowl with an upper rim, and said upper rim having a front lip, a seat means on which the person sits and said seat means pivotally mounted on the lavatory and movable from a seating, down position adjacent the rim to an up position spaced from at least the front portion of the rim, and said seat means having a pair of spaced apart bumper means on the lower surface thereof engaging said rim means to separate said seat means a predetermined separation from the rim means for the condition of said seat means in said down position, comprising, in combination:

a body means having an outwardly curved top edge, an outwardly curved bottom edge spaced a first preselected distance from said top edge, a pair of side edges extending between said top edge and said bottom edge and spaced a second preselected distance apart and said second predetermined distance less than the spacing between said spaced apart bumper means on said seat means;

a hook means coupled to said top edge of said body means and having:

an upper member having an upper surface and a lower surface and a first predetermined thickness therebetween and extending substantially at right angles to said body means and having a width substantially equal to said second preselected distance between said side edges of said body means, and said upper member having an outwardly curved outer edge coupled to said top edge of said body means and an outwardly curved inner edge spaced an outwardly curved third preselected distance from said outer edge and said upper member positionable intermediate said upper rim of said bowl of said lavatory and said seat means thereof for said seat means in said down position thereof;

a flange member coupled to said inner edge of said upper member and depending therefrom to define a rim receiving cavity between regions of said body means adjacent said top edge thereof, said upper member and said flange member, and said flange member extending continuously substantially said second predetermined distance defining a splash guard for preventing the passing of liquid therethrough, and said hook means engageable with said front portion of said rim of said lavatory whereby said body means depends downwardly from said rim on the outside thereof and said flange member of said hook means extends downwardly from said rim on the inside thereof;

a seal means extending continuously substantially said second predetermined distance having a second predetermined thickness coupled to said upper surface of said upper member of said hook means in regions adjacent said inner edge thereof and extending substantially said second predetermined distance for engaging the lower surface of said seat means of said lavatory for said seat means in the seating, down position thereof, and the combined thickness of said first predetermined thickness of said upper member and said second predetermined thickness of said sealing means substantially equal to said predetermined separation between said rim means and said seat means;

a pair of feet support means coupled to said body means adjacent said inwardly curved bottom edge thereof and a first of said pair of feet support means extending horizontally outwardly in a first direction from a first of said pair of said side edges of said body means, and the second of said pair of feet support means extending horizontally outwardly from the second of said pair of side edges of said body means in a second direction opposite said first direction; and

each of said foot support means comprises a bar-like extension having an upper surface, a lower surface, a front surface, and a rear surface, and said upper surface of each of said feet support means is positioned at a predetermined angle to slope downwardly from said rear surface thereof toward said front surface thereof.

4,198,717

MODULAR ASSEMBLY FOR DRAIN TRAP

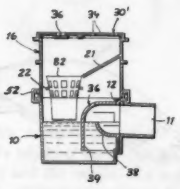
Bernhard Kessel, Ingolstädter Str. 20,, 8073 Kösching, Fed. Rep. of Germany

Continuation of Ser. No. 688,283, May 20, 1976, abandoned. This application Apr. 7, 1978, Ser. No. 894,488

Claims priority, application Fed. Rep. of Germany, May 21, 1975, 2522424

Int. Cl.[2] E03C *1/28*; F16L *5/00*

U.S. Cl. 4—286 12 Claims



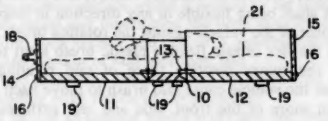
1. A modular assembly for a drain trap, comprising:

an upwardly open housing of substantially prismatic shape with a generally rectangular horizontal outline having a sidewall provided with an exit port for waste water accumulated therein, said sidewall defining one of the minor sides of the rectangle and being internally formed below said exit port with a pocket open toward the top;

a tubular insert having a closed top, a bottom inlet and a side outlet, said insert having a width substantially smaller than that of said housing in a direction parallel to the major sides of the rectangle and being provided with a depending foot portion adjacent said sidewall receivable in said pocket for juxtaposing said insert in said housing with said sidewall in a position of alignment of said outlet with said exit port, said insert being further provided at said closed top with an upstanding flange in line with said foot portion; and

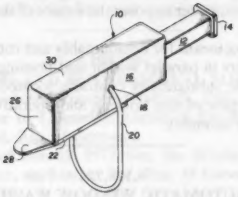
inwardly extending ancillary fastening means on said sidewall above said exit port engageable with said flange for securing said insert to said housing in cantilevered position on said sidewall.

4,198,718
PORTABLE FOLDING BED
Clella N. Ballard, 708 Manor Dr., Milford, Mich. 48042
Filed Aug. 3, 1978, Ser. No. 930,724
Int. Cl.[2] A47D 9/00
U.S. Cl. 5—93 B 5 Claims



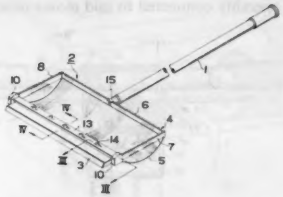
1. A pet portable folding bed comprising a flat center section of rectangular configuration defining elongated sides and narrow ends, a first rounded substantially semi-circular end section hinged to an elongated side of said center section, a second rounded substantially semi-circular end section hinged to the other elongated side of said center section, said second rounded end section having the same shape but having a slightly smaller area of slightly smaller circle radius than said first rounded end section, and rigid sidewalls extending perpendicularly in the same direction from the narrow ends of said center section and the edges of said end sections, said sidewalls defining an enclosed area and being positioned in nesting relationship when said end sections are folded toward each other with the sidewall of said second end section disposed substantially parallel and within the sidewall of said first end section.

4,198,719
TENT PEG MALLET AND REMOVER
Gary R. Feldpausch, 2412 Vollmer Rd., Richmond, Va. 23229
Filed Nov. 6, 1978, Ser. No. 958,028
Int. Cl.[2] B66F 15/00
U.S. Cl. 7—146 8 Claims



1. A tool for driving into or removing from the ground a tent peg or the like, said tool comprising:
an elongated mallet portion;
a substantially rigid plate secured to the side of said mallet portion and extending beyond one end thereof to define an outwardly extending, inwardly tapering, substantially rigid tab, and
a cable secured to said mallet portion and adapted to engage a tent peg to facilitate its removal from the ground,
said mallet portion having a substantially flat side surface and said plate being substantially flat and straight and being secured to said side surface, said plate being of substantially the same width as said side surface and covering a substantial portion thereof so that said plate may be engaged with a peg for driving it into the ground.

4,198,720
DIRT REMOVER FOR WATER TANK
Akio Matsumoto, 5-3-2-304, Higashi-Murayama-shi, Tokyo, Japan
Filed Sep. 14, 1978, Ser. No. 942,378
Claims priority, application Japan, Nov. 15, 1977, 52-152255[U]
Int. Cl.[2] E04H 3/20
U.S. Cl. 15—1.7 4 Claims



1. A dirt remover for removing dirt from a water tank, said dirt remover comprising:
a frame formed of a rear frame member, two lateral frame members extending forwardly from opposite ends of said rear frame member, and a straight frontal frame member positioned between leading ends of said two lateral frame members;
two connecting members for connecting opposite ends of said frontal frame member to respective said leading ends of said two lateral frame members, each said connecting member having a first insertion hole for receiving therein the said leading end of the respective said lateral frame member, and a second insertion hole for receiving therein the respective said end of said frontal frame member, said first and second insertion holes extending perpendicular to each other, and each said connecting member having extending therefrom an integrally formed protuberance;
a net hung from inner sides of said frame loosely enough for a middle portion of said net to sag downwardly, said net and frame forming a scooping portion;
a handle including a leading end attached to said rear frame member of said frame, said handle forming means for manipulating said scooping portion; and
a plate-shaped sliding piece made of a material having desired degrees of rigidity and elasticity, said sliding piece being attached to said frontal frame member of said frame throughout the entire length thereof, said sliding piece having a leading edge protruding outwardly from said scooping portion.

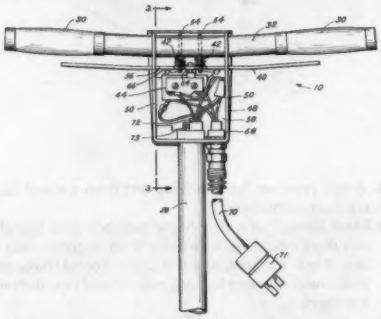
4,198,721
COMBINATION MOTOR AND AUXILIARY MECHANISM ACTUATOR
William M. Copeland, Hoffman Estates, Ill., assignor to Servicemaster Industries, Inc., Downers Grove, Ill.
Filed Jul. 3, 1978, Ser. No. 921,213
Int. Cl.[2] A47L 11/03; H01H 3/02
U.S. Cl. 15—50 R 7 Claims

1. In a manually operated rotary cleaning machine of the type having a base assembly, a handle assembly and at least one auxiliary cleaning mechanism, said base assembly including motor means and said handle assembly including a handle grip portion with spaced handle grips, the improvement of a combination motor means and auxiliary cleaning means actuator comprising:
a substantially rigid, elongated actuator member mounted on said handle assembly for movement to at lease a first actuator position, a second actuator position, and a third actuator position, said actuator member extending alongside said handle grip portion between said handle grips and having two free ends, each of said free ends adjacent a handle grip, said actuator member movable from said

first actuator position to said second actuator position upon movement of either of said two free ends and movable to said third actuator positon from said first actuator positon only upon movement of both of said free ends;

means for biasing said actuator member to said first actuator position, said bias means mounted on said handle assembly;

first switch means operable in an energizing state for energizing said motor means and operable in a de-energizing state for de-energizing said motor means, said first switch means operably connected to said motor means; and



at least one second switch means operable in an energizing state for energizing said auxiliary cleaning means and operable in a de-energizing state for de-energizing said auxiliary cleaning means, said second switch means operably connected to said auxiliary cleaning means;

said first switch means and said second switch means mounted on said handle assembly so that movement of said actuator member to said second actuator position places at least said first switch means in said energizing state and movement of said actuator member to said third actuator position places at least said second switch means in said energizing state.

4,198,722

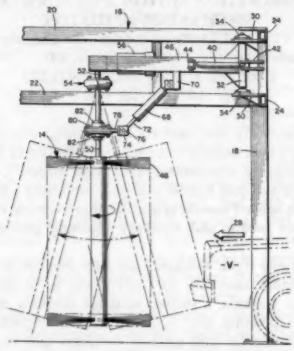
BRUSH ASSEMBLY FOR VEHICLE WASHING APPARATUS HAVING A FLEXIBLE PLASTIC BRUSH SHAFT

George T. Ennis, Playa del Rey, Calif., assignor to N/S Car Wash Enterprises, Inc., Sharon, Pa.

Continuation-in-part of Ser. No. 883,514, Mar. 6, 1978. This application Jun. 15, 1978, Ser. No. 916,001

Int. Cl.[2] B60S *3/06*

U.S. Cl. 15—53 AB **24 Claims**



1. In a vehicle washing apparatus, a brush assembly for washing a vehicle, wherein said brush assembly is a wrap around brush assembly for washing one or more of the front, side and rear surfaces of the vehicle, said brush assembly comprising: brush motor means;

a flexible plastic brush shaft connected to said brush motor means for rotation thereby; and

a brush mounted on said flexible plastic brush shaft for rotation therewith to wash the vehicle, said flexible plastic brush shaft being flexible in any direction in response to the force of the vehicle against the rotating brush, whereupon the flex of said flexible plastic brush shaft together with the rotary reaction force of said rotating brush against the vehicle cause said brush to move itself around one or more of the front, side and rear surfaces of the vehicle.

4,198,723

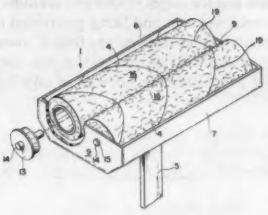
MULTI-ELEMENT PAINT ROLLER

Robert E. Hiller, Salisbury, Md., and Christopher Lawlor, North Ridgeville, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jul. 6, 1978, Ser. No. 922,298

Int. Cl.[2] B05C *17/02*

U.S. Cl. 15—230.11 **2 Claims**



1. A multi-element paint applicator comprising

(a) a housing;

(b) a roller assembly including first and second cylindrical hollow bore rollers and paint delivery means for delivering paint to a substrate comprising substantially identical first and second woven covers affixed to the outer surface of the first and second rollers, respectively, said rollers being disposed within the housing so that the weave of the first woven cover opposes the weave of the second woven cover;

(c) mounting means for demountably and rotatably engaging said rollers in parallel within said housing; and

(d) a handle substantially centrally located relative to the outer surface of said housing and operatively engaged to the roller assembly.

4,198,724

AUTOMATIC WINDOW WASHER

Sidney L. Fisher; Harry S. Fisher, and Ole E. Leivestad, all of Renton, Wash., assignors to Spider Staging, Inc., Seattle, Wash.

Filed Jul. 3, 1978, Ser. No. 921,325

Int. Cl.[2] A47L *1/04*

U.S. Cl. 15—302 **26 Claims**

18. A machine for washing a vertical surface of a tall structure, comprising:

frame means movable vertically up and down alongside of such vertical surface, including means for guiding said frame along defined vertical paths of travel;

washing equipment carried by said frame, comprising:

at least one brush which in use is in contact with the vertical surface;

means for dripping a cleaning liquid onto said brush in a sufficient amount to keep such brush wet and enable it

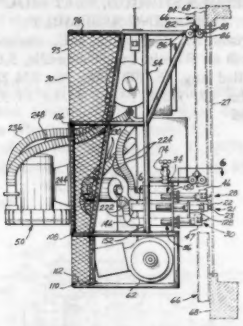
to apply a film of cleaning liquid onto the vertical surface;

power means for moving said brushes relative to said vertical surface, so that the brush will both scrub such surface and apply a film of cleaning liquid onto it;

squeegee means mounted in close proximity to said brush, and in use making wiping contact with the portion of the vertical surface which is wetted by the film of cleaning liquid and functioning the wipe the cleaning liquid from such surface and collect it generally at a leading edge portion of said squeegee; and

suction means for removing the cleaning liquid from the leading edge region of the squeegee;

a tank having an interior which is divided into two variable



volume compartments by a flexible wall, with one of said compartments being a storage compartment for clean cleaning liquid and the other being a storage compartment for used cleaning liquid, said means for dripping the cleaning liquid onto said brush including a distributor pipe having orifices contiguous to the brush and conduit means leading from the clean cleaning liquid storage compartment to the distributor pipe, and said suction means including conduit means for delivering used cleaning liquid collected thereby into the used cleaning liquid storage compartment of said tank; and

wherein said squeegee means comprises a flexible blade, and wherein the suction means includes passageways extending through said blade and a vacuum manifold in fluid receiving communication with said passageways.

4,198,725

CLEANING AND DUST REMOVAL MACHINE

Hermann Trützschler, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 862,043

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657565

Int. Cl.[2] B08B 5/02, 5/04

U.S. Cl. 15—306 B **8 Claims**

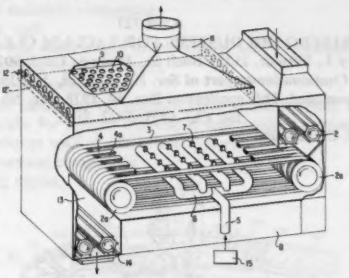
1. In apparatus for cleaning textile fiber tufts, said apparatus including an endless, continuously advancing, air-permeable conveyor belt, means for continuously supplying textile fiber tufts to the upper side of the conveyor belt, and means for sucking air and dust away from the belt, the improvement wherein:

said conveyor belt is provided with openings whose width is less than the size of the tufts; and

said apparatus further comprises

means disposed for emitting surges of compressed air in the direction toward said conveyor belt and located at the side of said conveyor belt facing away from the side to which the tufts are supplied,

a perforated cover plate disposed on the side of said conveyor belt to which the tufts are supplied and located at a distance from said conveyor belt, said means for sucking air and dust away from said belt being connected to said perforated cover plate for pulling air and dust through said plate, and



a vibrating metal sheet located between the upper and lower reaches of said conveyor belt for receiving and conveying away heavy waste which has dropped through the openings in the upper reach of said belt.

4,198,726

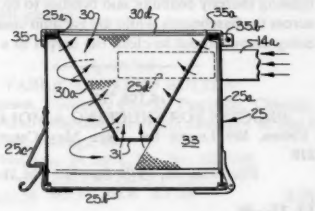
TRAVELING PNEUMATIC CLEANER FILTER

Benjamin S. Powell, Jr., Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.

Continuation-in-part of Ser. No. 900,248, Apr. 26, 1978, abandoned. This application Jun. 28, 1979, Ser. No. 52,866

Int. Cl.[2] A47L 7/00

U.S. Cl. 15—312 A **18 Claims**



1. In a traveling pneumatic cleaner for collection of fiber waste from a textile mill room and including fan housing means movable along a track over textile machines and having at least one air outlet portion thereon provided with an air discharge opening, a generally cylindrical fiber waste receptacle having a substantially vertically disposed generally cylindrical wall carried by the housing means and communicating therewith via the air discharge opening with the air discharge opening located near the upper end of the receptacle and being offset laterally with respect to the substantially vertical axis of the receptacle cylindrical wall, a suction inlet carried by and communicating with the fan housing means and adapted to receive therein fiber waste generated by the textile machines, and fan means for inducing flow of a suction air current into and through the suction inlet and the housing means and for directing fiber waste entrained in the air current through the discharge opening and into the receptacle as the air current is exhausted from the receptacle to the ambient; the combination therewith of an improvement which aids in the reduction of discharge of fine particles from the cleaner and comprising a filter means positioned in the receptacle and defining a surface of revolution so arranged relative to the laterally offset opening into the receptacle and relative to the cylindrical wall of the receptacle that the air current entering the receptacle will

be directed around the outer surface of the filter means and then through the filter means with the velocity of the air current being diminished and lowered as it passes through the filter means.

4,198,727

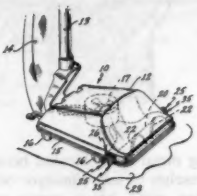
BASEBOARD DUSTERS FOR VACUUM CLEANERS

Gary L. Farmer, 11339 Buell St., Downey, Calif. 90241

Continuation-in-part of Ser. No. 870,728, Jan. 19, 1978, abandoned. This application Dec. 14, 1978, Ser. No. 969,348

Int. Cl.[2] A47L *5/22, 9/06*

U.S. Cl. 15—396 **12 Claims**



1. In a vacuum cleaner:

a housing having sidewalls;

holding means on each of the sidewalls having spaced dovetail openings; and

a brush for mounting on each of said holding means, each said brush including bristles secured on an inverted U shaped frame having a dovetail cross section such that the legs of said frame are engageable into the correspondingly shaped openings on said holding means;

whereby said brushes are held with their bristles extending substantially laterally from the opposite sidewalls of the housing thereby enabling said brushes to be used to sweep across the baseboards while the vacuum cleaner housing is being moved about to clean the carpet in a room.

4,198,728

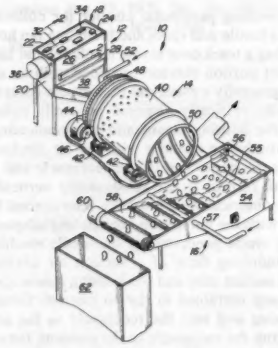
PROCESS FOR SHUCKING A MOLLUSK

Max Cohen, 489 Locust La., Cape May Court House, N.J. 08210

Filed Jun. 16, 1978, Ser. No. 916,314

Int. Cl.[2] A22C *29/04*

U.S. Cl. 17—48 **8 Claims**



1. A process for shucking mollusks comprising:

(a) feeding raw mollusks at room temperature without any prior heat treatment to a crusher,

(b) introducing a mechanical shock action to the mollusks in said crusher with the magnitude of the shock action being sufficient to release the attachment between the mollusk meat and the mollusk shell,

(c) performing step (b) in a manner so that the mollusks are rapidly accelerated and then rapidly decelerated and are subjected to a combination of shearing and crushing forces applied by two cooperating elements which break the shell while the mollusks are decelerated, using a rotating roller having a surface speed of not substantially less than 2800 feet per minute as one of said elements, using said roller for accelerating the shells, and

(d) using a separating apparatus for separating the mollusk meat from the mollusk shells.

4,198,729

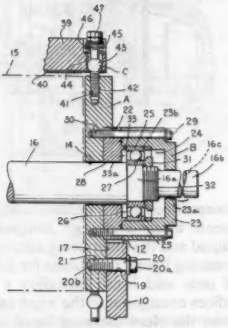
CARD CYLINDER SHROUD, FLAT MOUNTING AND BEARING ASSEMBLY

John E. Harrison, Sr., Greenville, S.C., assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed Aug. 15, 1977, Ser. No. 824,288

Int. Cl.[2] D01G *15/02, 15/12, 15/32*

U.S. Cl. 19—98 **3 Claims**



1. A shroud for a clothed cylinder and the like carrying a pair of opposed shafts, one of said shafts projecting from each end of said cylinder for mounting the cylinder for rotation, and side frame members with a bearing receiving opening adjacent an upper portion of said side frame members, said shroud comprising:

an annular element having a recess therein for receiving one of said shafts;

said annular element having a segmental portion thereof of reduced thickness;

said recess surrounding said one of said shafts; and

said portion of reduced thickness extending across said recess defining spaced ledge-like support surfaces on each side thereof of said recess for engagement with one of said side frame members.

4,198,730

WEB GUIDING DEVICE

Hans Trützschler, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,247

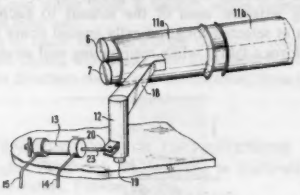
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2732016

Int. Cl.[2] D01G *15/48*

U.S. Cl. 19—106 R **10 Claims**

1. In a device for withdrawing and gathering a fiber web discharged by a carding machine which includes advancing rolls and withdrawing rolls; at least some of the withdrawing rolls forming a web delivering assembly; the device including a guide element arranged immediately downstream of the web delivering assembly as viewed in the direction of web advance in the carding machine and having a hollow guiding face

extending transversely to the direction of web advance; the improvement comprising means for adjusting the position of



said guide element with respect to the web delivering assembly as a function of the rpm of at least one of said rolls.

4,198,731

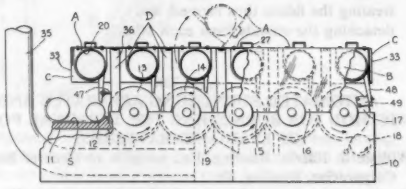
CARDING MACHINE CLEANING APPARATUS

John E. Harrison, Greenville, S.C., assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Continuation of Ser. No. 847,417, Oct. 31, 1977, abandoned. This application Nov. 8, 1978, Ser. No. 958,792

Int. Cl.[2] D01G *15/76*

U.S. Cl. 19—107 **9 Claims**



1. A cleaning apparatus for a machine having aligned rolls covered with card clothing comprising:

an upright closure member fixed adjacent a side of said machine;

a suction housing fixed adjacent the other side of said machine having a suction opening therein;

an elongated plenum open on both ends and having a longitudinal suction slot therein;

support means for removably positioning said plenum in cleaning relation transversely of the carding machine closely adjacent and in alignment with said closure member on one end and closely adjacent and in alignment with the suction opening on the other end to establish suction in said plenum for cleaning of the carding machine through said suction slot; and

said support means including open receiving members fixed adjacent each side of said machine permitting the plenum to be removed therefrom and then replaced therein;

whereby said plenum may be moved out of said alignment to discontinue suction cleaning and permit inspection after which said plenum may be moved back into said alignment to automatically restore suction in said plenum by replacing said plenum.

4,198,732

ADJUSTABLE CLASP CONSTRUCTION FOR BRACELETS AND THE LIKE

Kurt A. Rieth, Warwick, and Stephen F. Bert, West Warwick, both of R.I., assignors to Textron, Inc., Providence, R.I.

Filed May 22, 1978, Ser. No. 908,229

Int. Cl.[2] A44B *11/25*

U.S. Cl. 24—78 **9 Claims**

1. In an adjustable clasp for interconnecting end sections of a bracelet on the wrist of a wearer including in combination,

a clamp assembly for receiving one of the bracelet sections in slidable, adjustable relation, and

a coupling assembly secured to the other bracelet section and being engagable with said clamp assembly for interlocking the bracelet on the wrist of a wearer,

said clamp assembly comprising,

a bottom wall

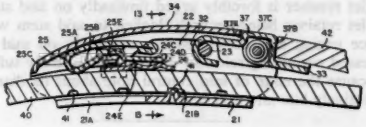
opposed side walls joined to the bottom wall and extending substantially normal thereto,

pressure plate means, and

means for mounting the pressure plate means between said side walls for limited movement substantially normal to said bottom wall of said clamp assembly,

the improvement comprising,

clamping means,



means for pivotally mounting one end of said clamping means between said side walls of the clamp assembly above a portion of said pressure plate means,

said clamping means comprising an upper member one end of which is pivotally mounted between said walls and a lower member integral with the other end of the upper member and generally parallel thereto, at least the free end portion of said lower member comprising a resilient member which engages the upper surface of said pressure plate means when said clamping means is rotated about its said pivotal mounting means to closed position and thereby urges at least a portion of the lower surface of said pressure plate means into frictional engagement with said one bracelet section.

4,198,733

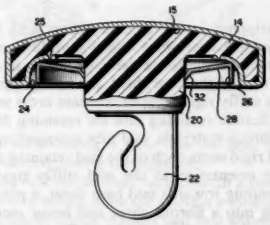
FABRIC COVERED BUTTON

Bruce A. Ferguson, Hinsdale; Leo D. Ptasinski, Chicago, and Harvey E. Schulz, Hillside, all of Ill., assignors to The Maxant Corporation, Chicago, Ill.

Filed Sep. 20, 1978, Ser. No. 943,999

Int. Cl.[2] A44B *1/12*

U.S. Cl. 24—113 R **5 Claims**



1. A fabric covered button comprising a button portion in the form of a button head having on the rear face thereof a cylindrical-shaped stem of a diameter smaller than said button head and attachment means for securing said fabric covered button head and attachment means for securing said fabric covered button to an article integrally formed with the terminal end of said stem; a piece of fabric draped over said button head and extended around its edge to the rear thereof; and a circular-shaped collet retainer secured about said stem having a concave-shaped top wall and an annular depending side wall, the edges of said fabric at the rear of said button head being secured between the rear of said button head and the periph-

eral edge of said top wall of said collet retainer, said side wall of said collet retainer extending away from said button head, whereby the terminal edges of said side wall are prevented from cutting said fabric, said top wall having a central hole which can receive said stem, the peripheral portion of said top wall adjacent said central hole being angularly bent downwardly at a relatively sharper angle than the remainder of said top wall to form a camming surface which is engageable by said stem, the diameter of said central hole being smaller than the diameter of said stem, said collet retainer being secured to said stem with said side wall extending away from said rear face of said button head by forcibly urging said stem through said central hole by engaging said camming surface such that said top wall flexes outwardly sufficiently to receive said stem through said central hole and to permit the edge of said central hole about its diameter to frictionally engage said stem as said collet retainer is forcibly urged upwardly on said stem, said collet retainer being securely locked to said stem when the force urging said collet retainer upwardly on said stem is released permitting said top wall to flex inwardly sufficiently to cause the edge of said central hole about its diameter to effectively bite into said stem.

4,198,734

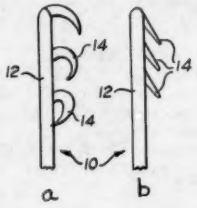
SELF-GRIPPING DEVICES WITH FLEXIBLE SELF-GRIPPING MEANS AND METHOD

George C. Brumlik, 134 Upper Mountain Ave., Montclair, N.J. 07042

Continuation of Ser. No. 727,491, Sep. 28, 1976, abandoned, which is a continuation of Ser. No. 525,906, Nov. 21, 1974, abandoned, which is a continuation of Ser. No. 387,976, Aug. 13, 1973, abandoned, which is a continuation of Ser. No. 240,958, Apr. 4, 1972, abandoned. This application Jan. 31, 1978, Ser. No. 874,300

Int. Cl.[2] **A44B** *17/00*

U.S. Cl. 24—204 **11 Claims**



1. A self-gripping device for engagement with fibrous materials comprising a base sheet and a multitude of bristle-like gripping elements mounted in dense profusion in all directions over the surface of the base sheet, the said gripping elements comprising a stiffly rigid stem of constant cross sections and a plurality of flexible retaining nibs for retaining fibers or fiber bundles of fibrous materials, said nibs arranged one above the other on said rigid stem, each of the said retaining nibs attached in transverse orientation to the said stiffly rigid bristle-like stems and bending towards said base sheet, a plurality of said stems passing into a fibrous sheet and being secured thereto such that the nibs thereof engage said fibrous sheet.

4,198,735

METHOD FOR FORMING TEMPORARY FABRICS

Phillip W. Chambley, and Alan H. Norris, both of Rome, Ga., assignors to WWG Industries Inc., Rome, Ga.

Filed Mar. 29, 1978, Ser. No. 891,307

Int. Cl.[2] **D06P** *7/00*; **D02J** *1/08, 1/16*

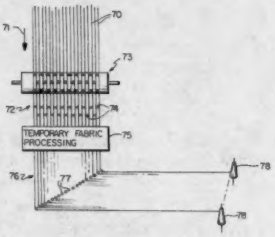
U.S. Cl. 28—218 **6 Claims**

1. A method of forming a temporary fabric and of treating yarn strands therein comprising the steps of

providing more than two yarn strands;

longitudinally moving and guiding the yarn strands along a path in substantially parallel, closely spaced relationship with each other;

joining said strands together in groups by detachably connecting adjacent ones of the strands to each other in groups at selected longitudinally spaced zones to temporarily form a fabric while maintaining said strands in substantially parallel relationship, said step of connecting adjacent strands to each other being performed by abrading the strands to dislodge ends of fibers therein and twisting the dislodged fiber ends from adjacent strands around each other;



treating the fabric thus formed; and

detaching the strands from each other.

4,198,736

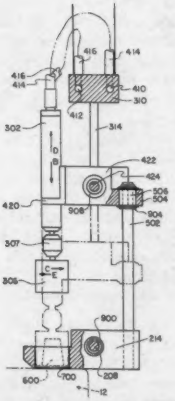
AUTOMATED BURNISHING APPARATUS AND METHOD FOR BURNISHING THE TERMINAL POSTS OF LEAD-ACID BATTERIES

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 697,786, Jun. 21, 1976, Pat. No. 4,119,137, which is a continuation of Ser. No. 618,772, Oct. 2, 1975, Pat. No. 3,980,126, which is a continuation-in-part of Ser. No. 432,545, Jan. 11, 1974, Pat. No. 3,954,216, which is a continuation-in-part of Ser. No. 395,528, Sep. 10, 1973, Pat. No. 3,861,575, which is a division of Ser. No. 184,338, Sep. 28, 1971, abandoned. This application Mar. 16, 1978, Ser. No. 887,063

Int. Cl.[2] **B21C** *37/30*; **B23B** *39/16, 39/00*

U.S. Cl. 29—90 R **7 Claims**



1. An automated burnishing apparatus for burnishing at least one terminal post of a lead-acid storage battery, said apparatus comprising:

(a) battery terminal locating means for selectively engaging at least a portion of a battery;

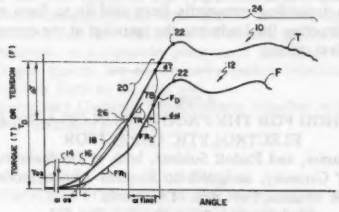
(b) rotatable burnishing means movable with respect to said locating means for surrounding and burnishing a terminal post;
(c) means mounting said burnishing means for movement toward and away from a battery while surrounding a terminal post; and
(d) means to cause said burnishing means to rotate in one direction during movement toward a battery and in the opposite direction during movement away from a battery.

4,198,737

TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,342
Int. Cl.[2] B23P *19/06*; B25B *23/14*; G01L *5/24*
U.S. Cl. 29—240 **4 Claims**



1. Apparatus for tightening a multiplicity of joints having components including at least one threaded fastener to substantially the same final desired tension value below the yield point of any joint component that can be correlated with stress, comprising

a powered tool for tightening the fastener;

means for determining a function of the torque applied to the fastener and a function of the angle of advance of the fastener;

means for calculating a tightening parameter, which varies from one fastener to the next, from the determined functions sufficient to tighten the fastener to the final desired tension value below the yield point of any joint component that can be correlated with stress; and

means for terminating tightening on attainment of the tightening parameter.

4,198,738

TOOL TO INSTALL ELBOW JOINT AND CLAMP

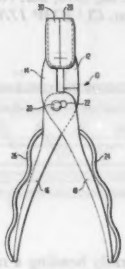
Jerry L. Wallace, 240 N. Ashland Ave., Michigan City, Ind. 46360

Filed Apr. 12, 1978, Ser. No. 895,796
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—268 **3 Claims**

1. In the combination of a pipe and elbow joint and tool for assembly thereof wherein said joint consists of a pipe, a collar having a cylindrical side wall mounting an inwardly directed flange, slidable thereon, a mounting flange integral with said elbow and a heavy rubber gasket normally compressed within the collar and abutting the flange when said joint is assembled, the improvement comprising:

opposed jaws having integral levers extending therefrom, and a common pivot means interconnecting said levers for translating a compressive force on said levers to a compressive force on said jaws;

upper and lower arcuately bifurcated gripping members mounted on said jaws, and means carried by said members for engaging, respectively, at least a portion of the upper surfaces of said collar and at least a portion of the lower surface of said flange, said means comprising upper and lower arcuate support members opening outwardly and extending from the end portion of said jaws opposite said common pivot means and an upper and a lower, arcuate, inwardly extending flange, said flanges mounted, respectively, on the upper and lower support members and extending normal thereto to form with said support members opposed, arcuate gripping and holding surfaces substantially L-shaped in cross section symmetrical with said pipe and elbow with one support member and flange adapted to engage respectively at least a portion of the collar side wall and inwardly directed flange and the other flange engaging the elbow mounting flange, whereby when said members engage, respectively a collar and a mounting flange with a rubber gasket therebetween a compressive force on said levers will be translated through said jaws to draw said collar and flange together.

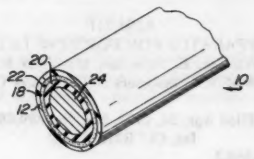


4,198,739

PRINTING ROLLER WITH POLYMERIC CONER AND METHOD OF MAKING THE SAME

William D. Budinger, Chadds Ford, Pa.; James L. Keen, Hockessin, and Joseph D. Kellner, Wilmington, both of Del., assignors to Rodel, Inc., Newark, Del.

Filed May 19, 1976, Ser. No. 687,717
Int. Cl.[2] B29B *27/12*; B32B *7/10*
U.S. Cl. 29—132 **14 Claims**



1. A method for bonding a thin tube of heat shrinkable material to a core comprising the steps of:

(a) coating said tube on its inner surface with a first thermoplastic adhesive which does not contain a curing agent in a solvent solution which renders said first adhesive tacky;

(b) evaporating said solvent from said first adhesive solution to produce a tack-free adhesive, capable of being stored for several months without substantial loss of adhesive qualities;

(c) coating said core with a second adhesive containing a curing agent in an effective amount to cure both adhesives in a cross-linking chemical reaction;

(d) placing said tube having its inner surface coated with said tack-free adhesive over said core; and

(e) heat shrinking said tube onto said core at a temperature sufficient to melt said adhesives to form an adhesive system whereby said curing agent migrates into said first

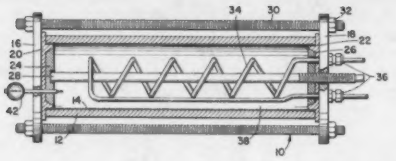
adhesive and cures both adhesives in a cross-linking chemical reaction to bond said tube to said core.

4,198,740

METHOD FOR FORMING OR BONDING A LINER

Thomas S. Prevender, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 24, 1978, Ser. No. 927,237
Int. Cl.² B23P *17/00*
U.S. Cl. 29—421 R **6 Claims**



1. The method of firmly bonding a relatively ductile metal liner to a steel element comprising placing said liner and said element in assembled relationship with one closely encircling the other, providing a confined water bath against said liner, thereafter initially freezing (at least) only a central portion of said water bath while so confined to thereby increase the pressure of peripheral portion of unfrozen (said) water against said liner and plastically deform the liner into firm engagement with said steel element, whereby said increase in pressure is transmitted uniformly through said peripheral portion of unfrozen water.

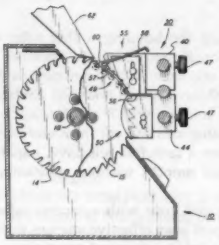
2. A method of bonding a thin aluminum liner to an outer steel shell comprising providing a steel shell having a first interior cavity, placing within said first interior cavity a closely fitting aluminum liner having a second interior cavity, filling said second interior cavity with water, initially freezing (at least) only a central portion of said water to cause an increase of pressure in peripheral portion of unfrozen (said) water thereby forcibly plastically expanding the aluminum liner into firm engagement with the steel shell, whereby upon warming said aluminum and said steel shell are urged into more firm engagement by the differential expansion of aluminum and steel.

4,198,741

APPARATUS FOR FORMING LEADS

Ronald H. Wheeler, E. Syracuse, and John R. Batruch, Elbridge, both of N.Y., assignors to The Eraser Co., Inc., Syracuse, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,087
Int. Cl.² B21F *11/00*
U.S. Cl. 29—566.3 **6 Claims**



1. In a machine for trimming and shaping the outwardly extending leads of electrical components wherein the leads are seated between the teeth located upon coacting drive sprockets that are arranged to transport the components through two independent work stations including a first lead cutting station and a second lead forming station, the improvement comprising

a pair of stationary cutting blades mounted in the first station for engaging the outwardly extended leads of a component being transported therethrough to trim the leads to a predetermined length,

a pair of forming dies positioned in the second station that are arranged to contact the leads being transported therethrough and form the leads into a desired shape,

a guide element secured within the second station to each of the dies and having an arcuate shaped body section positioned along the side wall of one of said sprockets and extending rearwardly in regard to the direction of sprocket movement, each guide element being formed of a single piece of spring steel that is adapted to ride in contact against a lead seated in said sprocket to hold the lead therein and direct it into contact with the forming die,

a contoured lip depending from said body section at the entrance to the cutting station that is turned outwardly in regard to the sprocket whereby a lead transported into the first station passes under the guide prior to contacting the forming die, and

an arm depending outwardly from said lip to form a ramp for directing the leads into the sprocket at the entrance to the first station.

4,198,742

METHOD FOR THE PRODUCTION OF A SOLID ELECTROLYTIC CAPACITOR

Robert Ramer, and Rudolf Soldner, both of Heidenheim, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 904,873
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722899
Int. Cl.² B01J *17/00*
U.S. Cl. 29—570 **2 Claims**

1. In a method of producing a solid electrolytic capacitor which has a sintered tantalum member as an anode, a dielectrically effective oxide layer on the tantalum member, a semiconducting manganese dioxide counter electrode, and an anode wire attached to the sintered tantalum member, the improvement therein comprising the steps of:

before producing the manganese dioxide layer, applying a suspension of polytetrafluorethylene in a solvent on the anode wire only at the entry point of the anode wire into the sintered member; and annealing the suspension after the application thereof onto the anode wire by heating the suspension at a temperature of approximately 300° C. for a time of approximately 10 minutes.

4,198,743

METHOD FOR FORMING A MAGNETIC CORE FOR A LINEAR COMPRESSOR

Richard A. Stuber, Ann Arbor, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation-in-part of Ser. No. 893,873, Apr. 6, 1978, which is a continuation of Ser. No. 738,708, Nov. 4, 1976, which is a continuation of Ser. No. 507,538, Sep. 19, 1974, abandoned. This application Jul. 14, 1978, Ser. No. 924,614
Int. Cl.² H02K *15/02*
U.S. Cl. 29—596 **7 Claims**

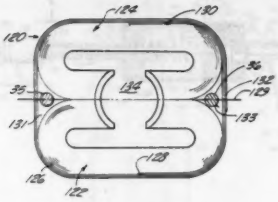
1. A method of making a magnetic core for a reciprocating electric motor comprising the steps of:

stacking a plurality of strips of magnetic material wherein the respective strips are of diverse lengths and are stacked such that the strips are in order of decreasing length, in a first direction,

bending the stack of strips in said first direction around the shortest length strip to a generally C-sahped configuration,

stacking a second plurality of strips of magnetic material wherein the strips are of diverse lengths and are stacked such that they are in order of decreasing lengths in a second direction,

bending the second mentioned stack of strips in said second direction into a generally C-shaped configuration around the shortest length strip thereof,



each of said C-shaped stacks having an air-gap space defined by the end edges of the respective strips, said air-gap spaces being generally semi-circular in cross-section,

positioning said first and second C-shaped stacks in flatwise abutment on a common plane such that their respective air-gap spaces are in mutually facing relationship and together form an air-gap, and

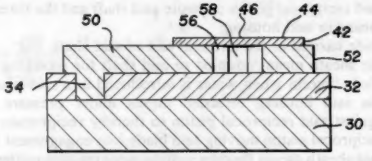
fastening said C-shaped stacks tightly together in their flatwise abutment position.

4,198,744

PROCESS FOR FABRICATION OF FUSE AND INTERCONNECTS

Hugh C. Nicolay, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 16, 1978, Ser. No. 934,150
Int. Cl.[2] H01H *69/2*
U.S. Cl. 29—623 **9 Claims**



1. A method for fabricating thin film fuses on a substrate comprising:

applying a first layer of metallic material on said substrate;

applying a second layer of fusible material on said first layer;

first selectively removing portions of said second layer to define a fuse element;

second selectively removing portions of said first layer, except for portions coextensive with said fuse element, to define interconnects; and

third selectively removing a portion of said coextensive portion of said first layer between the ends of said fuse element by side etching without affecting said fuse element and interconnects.

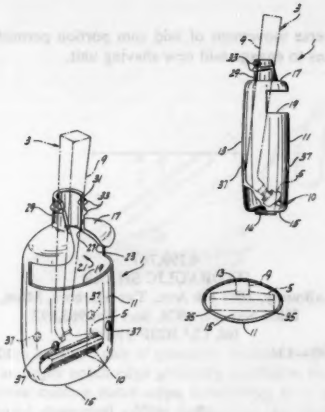
4,198,745

RAZOR GUARD

Walter G. Moehlenpah, 9906 Old Warson Rd., St. Louis, Mo. 63124

Filed Jul. 17, 1978, Ser. No. 925,456
Int. Cl.[2] B26B *19/38*
U.S. Cl. 30—34 R **15 Claims**

1. For holding a safety razor having a head, a blade carried by the head and a handle extending from the head, an elongate razor guard of one-piece construction formed for holding the razor with the longitudinal axis of the razor handle generally parallel with the longitudinal axis of the razor guard, said guard having a surface curved for engagement solely by the corners of the razor head at the ends of the head, the razor blade thereby being spaced from the surface for preventing dulling of the blade, and means for holding the razor in a



substantially fixed position relative to the guard for said engagement of the razor head with the curved surface, said holding means comprising means at one end of the guard for gripping one of the razor head and handle and means at the other end of the guard for restraining movement of the other of the razor head and handle thereby to maintain it in position relative to the guard.

4,198,746

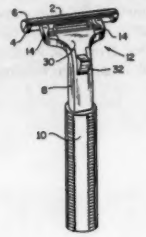
ALL PLASTIC SWIVEL HEAD RAZOR HANDLE

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 805,137, Jun. 9, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,248
Int. Cl.[2] B26B *21/06*
U.S. Cl. 30—47 **1 Claim**

1. A razor handle comprising a grip portion and a head portion molded integrally as a single unit, the head portion having first and second arm means molded integrally with said head portion and having mounting means thereon for pivotally mounting a shaving unit therebetween, spring means molded integrally with and extending from said head portion and adapted for engagement with said shaving unit to exert a biasing force thereon, and a cam portion disposed in said handle, said cam portion having first and second cam surfaces and being movable in said handle to a position in which said cam portion first and second cam surfaces respectively engage said first and second arm means to force apart said arm means

whereby to release said shaving unit held by said arm means and position said arm means for acceptance of a new shaving



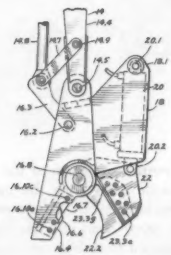
unit, reverse movement of said cam portion permitting said arm means to engage said new shaving unit.

4,198,747

HYDRAULIC SHEAR

Roy E. LaBounty, 1607 8th Ave., Two Harbors, Minn. 55616

Filed Nov. 22, 1978, Ser. No. 963,092
Int. Cl.[2] B23P *19/00*
U.S. Cl. 30—134 **12 Claims**



1. Hydraulic shear for shearing a workpiece comprising:

a. spaced opposing side frames mounted on a first pivot point;

b. first forward shear blade affixed to one of said side frames;

c. second forward shear blade affixed to the other of said side frames;

d. rearward shear frame rotatably mounted on said first pivot point and in between said spaced opposing side frames;

e. configured rearward shear blade including a shearing edge configured on at least two different radii, one radius being less than the other radius, affixed to said rearward shear frame, and;

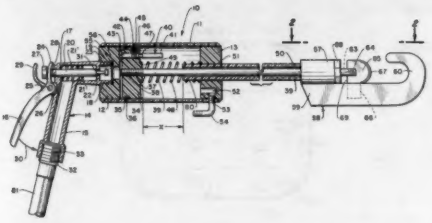
f. first hydraulic cylinder affixed between a second pivot point and a third pivot point on said rearward shear frame whereby said first hydraulic cylinder moves said rearward shear frame forward thereby carrying said configured rearward shear blade forward between said forward shear blades to shear said workpiece between said blades and the force of shearing being maximum over one point on said least radii of said configured rearward shear blade.

4,198,748

HYDRAULICALLY ACTUATED GARDEN TOOL

John B. Lewis, Paradise, Calif., assignor to C.M.T. Tool, Paradise, Calif.

Filed Aug. 9, 1978, Ser. No. 932,204
Int. Cl.[2] B26B *17/00*
U.S. Cl. 30—180 **12 Claims**



1. In a hydraulically actuated garden tool, fluid actuated branch cutting means adapted to be coupled to a source of water under pressure, conventional piston-actuated hose fitting having a grip and an internal spring-biased piston actuated by a handle on said grip coupled at one end to a hose connected to said source of water and having threaded means at the other end for quickly and easily coupling said piston-actuated hose fitting to said branch cutting means, said threaded means being in fluid communication with said hose with said piston controlling the flow of water from said hose through and out of said threaded means, said branch cutting means comprising:

a housing having threaded means at one end adapted to threadably engage the threaded means on said hose fitting and provide fluid communication between both said threaded means;

a reciprocal piston mounted in said housing;

a shaft fixed to said reciprocal piston extending out of one end of said housing;

a water inlet in fluid communication with both the end of said reciprocal piston opposite said shaft and the threaded means in said housing;

a blade carried at the terminal end of said shaft; and

blade sheath means coupled to said shaft for receiving said blade therein when water is introduced into said housing via said housing threaded means under pressure and against said reciprocal piston to thereby reciprocate said reciprocal piston moving said blade into engagement with said sheath means thereby cutting any branches or the like disposed between said blade and sheath means.

4,198,749

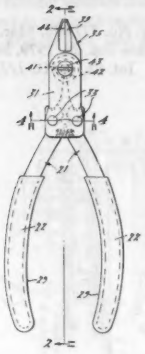
HAND OPERATED CUTTING TOOL

Fred W. Nordin, Orangeburg, S.C., assignor to Utica Tool Company, Inc., Orangeburg, S.C.

Filed Apr. 5, 1978, Ser. No. 893,703
Int. Cl.[2] B26B *17/02*
U.S. Cl. 30—192 **11 Claims**

1. A compound pivot, pliers-type tool having readily replaceable jaws comprising a pair of handles, a pair of parallel spaced mounting plates, means mounting said handles between said plates for pivotal movement about spaced parallel axes perpendicular to said plates, a pair of jaws each having a mounting portion extending between said plates and a work performing portion extending outwardly beyond said plates, each said mounting portion having one of a pair of arcuate grooves formed in a surface thereof adjacent one of said plates, means mounting said jaws between said plates for pivotal movement relative to said plates and holding said jaws and plates in assembled relation, said means mounting said jaws including readily removable fastening means extending between said plates and only a single frangible ring removably located in said pair of arcuate grooves, the removal of said

fastening means allowing removal of said ring and said jaws from said tool, and cooperating engaging means on said handles and on said jaws for operating said jaws in response to



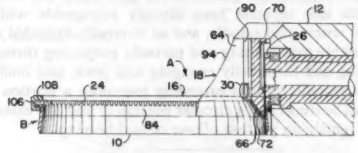
movement of said handles, the tension strength of said ring being such that, in use, said ring will fail before sufficient closing force is applied to said jaws to break one of said jaws.

4,198,750

RING BLADE KNIFE HAVING WEAR PLATE

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Filed Oct. 16, 1978, Ser. No. 951,594
Int. Cl.[2] A22C *17/04*
U.S. Cl. 30—276 **5 Claims**



1. A hand knife for cutting meat and the like comprising a handle, a ring-like blade housing secured at one portion to and extending from the handle, a ring-like solid blade carried by the housing for rotary movement relative to the housing, said housing circumferentially encircling a portion of the outside periphery of the blade, an arcuate member secured against said housing adjacent the handle of said knife, said arcuate member having an arcuate surface facing an inside circular surface of said blade and located relative to said housing to contact an inside circular surface of said blade when a force is applied to said blade in a direction having a component away from said handle.

4,198,751

SKINNING KNIFE

Lawrence E. Egbert, 20463 Schaefer, Detroit, Mich. 48235

Filed Dec. 11, 1978, Ser. No. 968,279
Int. Cl.[2] B26B *29/00*
U.S. Cl. 30—286 **4 Claims**

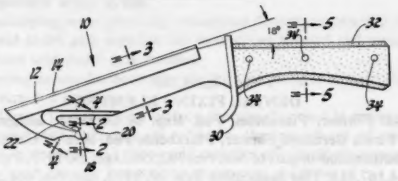
1. A skinning knife, comprising:

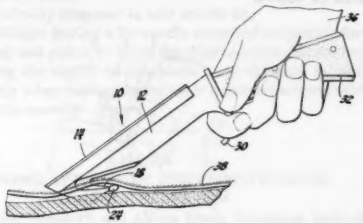
an elongated handle;

an elongated metal blade having one end connected to the handle to form an obtuse angle therewith, the blade having a pair of side edges including an outer side edge and an inner side edge;

the outer side edge of the blade being sharpened to form a cutting edge and terminating in a pointed end;

the inner side edge of the blade having a notch extending toward the outer side edge and opening in the direction away from said pointed end;





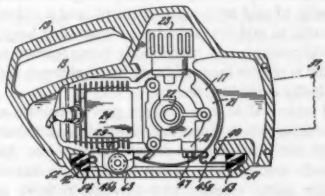
said notch having a pair of generally opposed edges including an upper notch edge generally parallel to the handle, a lower cutting notch edge terminating in a tip and a rounded sharpened corner connecting the upper notch edge and the lower notch edge.

4,198,752

CHAIN SAW HAVING ANTI-VIBRATION FEATURES

Kenneth L. Bross, Bourbonnais, Ill., assignor to Roper Corporation, Kankakee, Ill.

Filed Sep. 27, 1978, Ser. No. 946,070
Int. Cl.[2] B27B *17/02*; F16F *11/00*
U.S. Cl. 30—381 **15 Claims**



13. A chain saw comprising, in combination, a housing in the form of a shell fully open on one of its lateral sides and having integral front, back, top, bottom and side walls forming the other sides to define a central chamber; a motion assembly including an engine, forwardly projecting blade, and driven cutter chain; a mounting plate secured to the engine, said mounting plate having front and rear edges; the shell having edge receiving means adjacent the front and back walls of the shell for matingly receiving the front and rear edges of the plate, the central chamber being sized to receive the engine so that the engine and its mounting plate may be slid into seated position in the chamber in the manner of a drawer for floating support above the bottom wall of the shell; means for securing to the engine the blade and cutter chain to complete the motion

assembly; and means for holding the assembly in seated position.

4,198,753

DENTAL FIXING ELEMENT

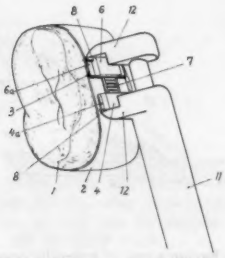
Rolf Förster, Pforzheim, Fed. Rep. of Germany, assignor to Firma Bernhard Förster, Pforzheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 792,193, Apr. 29, 1977, Pat. No. 4,167,813. This application Feb. 27, 1978, Ser. No. 881,380

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1977, 2713446

Int. Cl.[2] A61C 7/00

U.S. Cl. 433—8 15 Claims



1. A dental fixing element which is adapted to be fitted as an annular band around a tooth and to be secured to a dental appliance to hold the same in position, comprising

a strip metal element having two end portions, which are adapted to overlap in said annular band,

a first slide-snap fastener part, which is carried by one of said end portions, a second slide-snap fastener part which is carried by the other of said end portions, each of said fastener parts being formed with an undercut which is engageable by a suitable forceps, said first slide fastener part comprising an abutment member which includes a tunnel body defining a tunnel passage extending longitudinally of said strip metal element, and a detent spring secured to said tunnel body and extending longitudinally in said passage, said tunnel body being formed in its surface that is remote from said strip metal element with a longitudinally extending recess,

said second slide-snap fastener part comprises an abutment member which includes a bar held by said abutment member, said bar having a plurality of barblike oblique detent teeth spaced apart in the longitudinal direction of said strip metal element and movable relative to said first fastener part in a closing direction into said tunnel passage, said detent teeth adapted to selectively interenage with said detent spring in said tunael passage, in positions which determine respective diameters of said annular band, and a tubular member for receiving tooth correcting strips, disposed within said longitudinally extending recess,

said detent spring protruding transversely within said passage, generally at an acute angle to said closing direction and being selectively interengageable with said detent teeth in a plurality of positions, by means of a suitable forceps engaging respective undercuts and operable to move said detent teeth in said closing direction relative to said first fastener part.

4,198,754

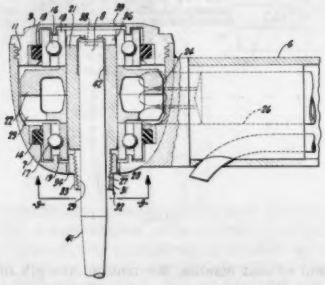
DENTAL TURBINE SPINDLE ASSEMBLY

Joseph P. Lares, 111 Wellesley Crescent, Redwood City, Calif. 94062, and Albert J. Lares, 351 Grove Dr., Portola Valley, Calif. 94025

Continuation of Ser. No. 777,438, Mar. 14, 1977, abandoned. This application Sep. 26, 1978, Ser. No. 946,028

Int. Cl.[2] A61C 1/12

U.S. Cl. 433—129 2 Claims



1. A dental turbine spindle assembly comprising a housing having an opening therein; means forming elastomeric bearing supports in said housing; bearings in said housing supported entirely on said bearing supports concentric with and spaced apart along an axis; a hollow cylindrical spindle portion in said housing directly engaging only a portion of the interior axial length of said bearings, extending along said axis and having an externally threaded end portion of reduced diameter projecting through said opening; a turbine runner directly mounted on said spindle between said bearings; axially extending slits in said end portion of said spindle dividing said end portion of said spindle into separate jaws directly engageable with a dental tool within said spindle; and an internally threaded nut partially within said housing and partially projecting through said opening and threadedly engaging said jaws, said hollow cylindrical spindle portion extending into only a portion of each of said bearings and a circular portion of said nut extending into a remaining portion of one of said bearings.

4,198,755

DENTAL HANDPIECE

Hermann Landgraf, Heppenheim, and Rainer Worschieschek, Lorsch, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 7, 1977, Ser. No. 813,448

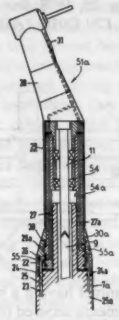
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1976, 2633223

Int. Cl.[2] A61C 1/12

U.S. Cl. 433—126 7 Claims

1. In a dental handpiece having a drive section and a grip section, said drive section having a housing containing a motor and a guide member encircling a drive shaft of the motor, said grip section at one end having a head section supporting a working instrument for rotation, said working instrument being rotated by a drive shaft carried in the grip section, said grip section at the other end having means coacting with the guide member to releasable couple the grip section and drive section together with the drive shaft of the motor engaged with a drive shaft of the grip section, said handpiece having at least one cooling medium line for conveying a cooling medium from a supply hose to the area of the instrument, each cooling medium line including a passage in the drive section coupled to a passage in the grip section when the drive section and grip sections are coupled together, the improvements comprising the grip section including at least a first part and second part being telescopically engaged with each other for relative rota-

tion therebetween, one of said parts being telescopically received on said guide member to couple said sections together, each of said first and second parts having a segment of a fluid passage for each of the cooling medium lines of the handpiece, said first part being fixed to the head section and surrounding the drive shaft of the grip section, said second part having



means forming a rigid and non-rotatable connection with the drive section with each segment connected to the respective passage of the cooling medium line of the drive section, and means for forming a rotatable fluid connection between each of the segments of the first and second parts for each passage of the grip section so that the grip section is free to rotate relative to the drive section of the handpiece.

4,198,756

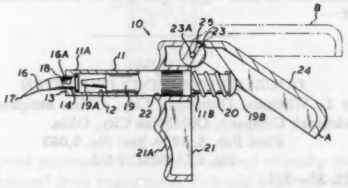
MANUAL EXTRUDER

William B. Dragan, R.D. #1 Burr St., Fairfield, Conn. 06430

Filed Nov. 18, 1977, Ser. No. 852,797

Int. Cl.² A61C *5/04*

U.S. Cl. 222—326 **3 Claims**



1. A manual extruder for extruding composite resins for use in dentistry comprising:

an elongated tubular barrel, said barrel having a front and rear end,

said front end having an inturned flange defining a front opening,

said barrel having a side breech opening adjacent said front end,

a plunger reciprocally mounted in said barrel for movement between a retracted and protracted position, said plunger extending into the rear end of said barrel whereby said plunger is readily insertable into and removed from the rear end of said barrel,

a handle means connected to said barrel so as to permit the insertion and removal of said plunger from the rear of said barrel,

said handle means including a pistol grip shaped member having a barrel opening disposed intermediate the ends of said member,

said barrel opening being sized for accommodating said rear end of said barrel whereby said pistol grip member is disposed normal and intermediate to the longitudinal axis of said barrel so that said pistol grip member extends to either side of said longitudinal axis,

means for fixedly securing said barrel in said barrel opening to said gripping member whereby said barrel is adapted to be disposed between the first and middle finger of an operator when in use,

an actuating lever pivotally connected directly to one end of said pistol grip member for movement toward and away from said pistol grip member,

a spring means for normally biasing said plunger toward the retracted position,

said lever having a cam surface thereon disposed in engagement with said plunger whereby the movement of said lever toward said pistol grip member effects displacement of said plunger toward the protracted position,

and a readily detachable nozzle tip extending through the front opening of said barrel,

said nozzle tip only being adapted to contain a supply of composition resin,

a piston slideably disposed in said nozzle tip,

and said plunger having a forwardly extended projection for engaging said piston to effect the displacement thereof for extruding the supply of composite resin disposed in said nozzle tip when said actuating lever is moved toward said pistol grip member.

4,198,757

FASTENING APPARATUS FOR LONGITUDINAL MEASURING SYSTEM

Gunther Nelle, Siegsdorf, and Alfons Ernst, Traunreut, both of Fed. Rep. of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

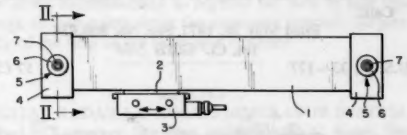
Continuation of Ser. No. 811,774, Jun. 30, 1977, abandoned.

This application Nov. 2, 1978, Ser. No. 957,236

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630880

Int. Cl.² G01B *11/02, 5/02*

U.S. Cl. 33—125 C **14 Claims**



1. An apparatus for mounting a precision measuring instrument to a mounting surface, said apparatus comprising:

first means for mounting a precision measuring instrument on a mounting surface at a first support area;

means, included in the first means, for spacing the measuring instrument from the mounting surface;

second means for mounting the measuring instrument on the mounting surface at a second support area, said second means including two ball joints, each ball joint having an element which defines a recess and a mating element adjustably positioned in the recess, wherein each ball joint is oriented to separate the measuring instrument from the mounting surface such that for each ball joint, relative movement between the respective mating element and recess defining element allows the ball joint to adjust to the mounting surface; and

means, included in the second means, for securing the measuring instrument to the mounting surface and for locking the two ball joints to substantially prevent relative movement between the recess defining elements and the respective mating elements, said securing means including a fastening member situated between the two ball joints to fasten the measuring instrument to the mounting surface substantially without applying distorting forces to the measuring instrument.

6. An apparatus for mounting a precision measuring instrument to a mounting surface, said apparatus comprising:

first means for mounting a precision measuring instrument on a mounting surface at a first support area;

means, included in the first means, for spacing the measuring instrument from the mounting surface;

second means for mounting the measuring instrument on the mounting surface at a second support area, said second means including a ball joint having an element which defines a recess and an aperture defining mating element adjustably positioned in the recess, wherein said ball joint is oriented to separate the measuring instrument from the mounting surface such that movement of the mating element with respect to the recess defining element allows the ball joint to adjust to the mounting surface; and

means, included in the second means, for securing the measuring instrument to the mounting surface and for locking the ball joint to substantially prevent movement of the recess defining element with respect to the mating element, said securing means including a fastening member which passes through the aperture defined in the mating element to fasten the measuring instrument to the mounting surface

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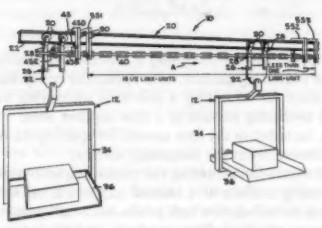
4,198,758

CHAIN MEASURING AND CONVEYOR CONTROL SYSTEM

Donald E. Eineichner, San Jose, and Barclay J. Tullis, Palo Alto, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed May 26, 1977, Ser. No. 800,834
Int. Cl.[2] G01B 7/04
U.S. Cl. 33—127 **17 Claims**



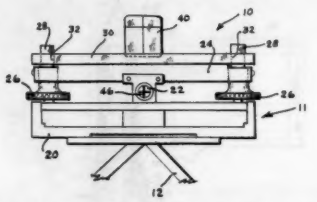
1. Apparatus for determining the actual length of a moving chain segment having a plurality of links comprising means to make a count of the links of the chain segment as said links pass a reference point, means to generate the product of said count and the nominal length of a link of the chain segment to establish a nominal length of said chain segment, means to measure the velocity of the moving segment, means to measure the elapsed time between the instant one end of said segment moving at said velocity passes a first point and the instant the other end of said segment moving at said velocity passes a second point spaced a known distance from said first point to provide data proportional to the actual length of said segment, and means to correct the nominal length of said segment in accordance with said data.

4,198,759

OPTICAL PLUMMET AZIMUTH REFERENCE ASSEMBLY

Theodore E. Wirtanen, Nashua, N.H., and Ronald M. Hitchcock, Bedford, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 25, 1978, Ser. No. 936,980
Int. Cl.[2] G01C 1/00, 15/00
U.S. Cl. 33—281 **5 Claims**



1. In an optical plummet having a base structure, an adjustable frame, a sighting means secured to said frame and a centerline reticle which can be viewed through said sighting means, the improvement therein being in the form of an azimuth reference assembly operably attached to said frame, said azimuth reference assembly comprising a rigid support, a centerline located on said support, said centerline being co-planar with said centerline reticle of said optical plummet, a pair of upstanding transparent elements mounted on said support, said elements being situated at opposite ends of said centerline, each of said upstanding elements having a vertical reticle and a horizontal reticle thereon forming a cross therebetween, said vertical reticle on each of said upstanding elements being co-planar with said centerline of said azimuth reference assembly and means operably associated with said support structure for removably securing said azimuth reference assembly to said frame whereby upon alignnent of said centerline of said optical plummet with respect to an object to be aligned, the azimuth reference line of said object can also be concurrently ascertained.

4,198,760

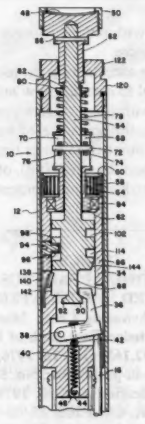
DOUBLE PUNCH INCLINOMETER

Henry L. Williams, Oklahoma City, Okla., assignor to The Geolograph Company, Oklahoma City, Okla.

Filed Feb. 5, 1979, Ser. No. 9,063
Int. Cl.[2] G01C 9/12
U.S. Cl. 33—311 **4 Claims**

1. In a device for determining the inclination of a well bore at a given depth which includes a longitudinally extending housing adapted to be lowered into the well bore to said depth, wherein the longitudinal central axis of said housing is substantially parallel with said well bore at said depth whereby said housing assumes the same inclination of said well bore at said depth, wherein a marking element is suspended from a point the central axis of said housing with a marking tip at the lower end of said element located on a true vertical line from said point, and wherein a chart member is mounted in said housing below said marking element and normally spaced from the marking tip thereon, said chart member being movable along said longitudinal axis of said housing and upwardly into a predetermined upper position for engagement with said marking tip, whereby said marking tip will make a mark on said chart member and whereby the position of said mark on said chart member relative to the center thereof provides an indication of the inclination of said well bore at said depth; the improvement which comprises a circle chart constituting said chart member; a circular chart holder for holding said chart thereon; a longitudinally extending camshaft mounted in said housing for axial movement along the longitudinal axis of said housing and also for rotational movement about said axis, said

camshaft having an upper end connected to said chart holder; compression spring means within said housing for urging said camshaft in an upward axial direction; torsional spring means coacting between said housing and said camshaft for urging rotation of said camshaft in a given rotary direction; a pivotal latch mounted in said housing below said camshaft and movable from a first latching position to a second latching position and to a third unlatched position; a control rod engageable with said latch for moving said latch successively from said first latching position to said second latching position and to said third unlatched position in response to timed movement of said control rod; said camshaft having a lower end with an axial extension thereon terminating in a pair of diametrically opposed radial feet, one of said radial feet being adapted to engage said latch in said first latching position to hold said camshaft in a downward position against the action of said compression spring means, the other of said radial feet being adapted to engage said latch in said second latching position to hold said camshaft in a downward position against the action of said compression spring means; cam means mounted on said camshaft and cooperating with said housing for first guiding the upward movement of said camshaft in an axial direction only in response to the movement of said latch from said first latching position to said second latching position as a result of



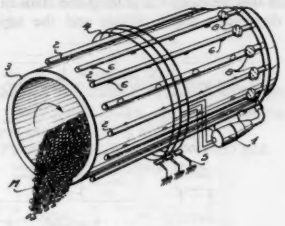
a first timed movement of said control rod whereby said one foot is released from engagement with said latch and whereby said chart is urged upwardly without rotation into said predetermined upper position, said cam means thereafter guiding said camshaft rotationally in said given rotary direction and through a first predetermined degree of rotational movement while simultaneously forcing said camshaft downwardly whereby said chart is lowered from its predetermined upper position and whereby said other radial foot engages said latch when said first predetermined degree of rotational movement is achieved, said cam thereafter guiding said camshaft for a second upward movement in response to the movement of said latch from said second latching position to said third unlatched position as a result of a second timed movement of said control rod whereby said other foot is released from engagement with said latch and whereby said chart is urged upwardly again without rotation into said predetermined upper position, said cam thereafter guiding said camshaft rotationally in said given direction and through a second predetermined degree of rotational movement while simultaneously forcing said camshaft downwardly whereby said chart is lowered from its predetermined upper position and whereby said camshaft ceases movement after said second predetermined degree of rotational movement is achieved.

4,198,761

FORCED BLOWING METHOD FOR FLUIDS ENABLING THERMAL EXCHANGES WITHIN A MOVING MASS OF MATERIAL PLACED IN A ROTATING CYLINDER

Michel A. R. Minerbe, Sartrouville, France, assignor to Societe pour la Recherche, l'Etude et Mise au Point de Tous Brevets, S.O.R.E.B., Mantes-la-Jolie, France

Filed Apr. 20, 1978, Ser. No. 898,493
Int. Cl.[2] F26B *3/08, 7/00*
U.S. Cl. 34—10 **1 Claim**



1. In a method of promoting physical or chemical exchanges in a moving mass of material contained in a cylindrical chamber that rotates about its axis, in which a fluid is fed to an annular manifold that extends about the chamber and fluid from the manifold is conveyed through a plurality of conduits that extend from the manifold and that are parallel to each other and to the axis of the chamber and are carried by the outside of the chamber, and in which said fluid is drawn from said conduits at a plurality of points spaced apart along the length of each conduit and introduced through the cylindrical wall of the chamber and into the interior of the chamber; the improvement comprising regulating the flow of said fluid by controllably adjusting said flow in each said conduit at a point disposed between said manifold and the said point most closely adjacent said manifold, whereby the regulation at each said point serves simultaneously to regulate the flow of said fluid through all said points along the associated conduit, independently of the flow in the other said conduits.

4,198,762

DIGITAL RADAR LANDMASS SIMULATOR SYSTEM

Michael V. Lamasney, San Jose, and Frederick C. Kaase, Sunnyvale, both of Calif., assignors to The Singer Company, Binghamton, N.Y.

Filed Sep. 5, 1978, Ser. No. 939,529
Int. Cl.[2] G01C *21/00*; G01S *9/00*
U.S. Cl. 35—10.4 **13 Claims**

1. A digital radar landmass simulator system for synthesizing a mapping radar display and a terrain following radar display of terrain elements which would be radar visible by a mapping radar antenna and a terrain following radar antenna on an imaginary aircraft flying over a simulation area comprising:

a mapping radar portion including,

parameter memory means containing at least those parameter signals which describe elements of the terrain of the simulation area that lie along imaginary sweep lines of radar waves emanating from the mapping radar antenna,

a parameter converter responsive to the terrain parameters in the parameter memory which describe each of the terrain elements that lie along each of the sweep lines and operative to develop signals which represent the slant range from the aircraft to the respective terrain element, the depression angle with respect to the respective terrain element and an adjusted radar reflectivity for the respective terrain element which is proportional to the portion of the radar wave which would be

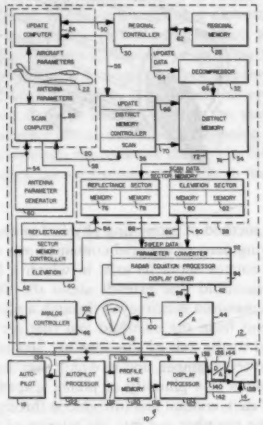
reflected by the respective terrain element and which would be received by the mapping radar antenna,

a display driver for developing from the adjusted radar reflectivity signals which are developed by the parameter converter, a mapping radar intensity modulating signal, and

mapping radar display means responsive to the mapping radar intensity modulating signal and operative to develop a mapping radar display of the radar visible portion of the simulation area; and

a terrain following radar portion including,

a profile line memory for storing the slant range signals, the depression angle signals and the adjusted radar



reflectivity signals which are developed by the mapping radar portion parameter converter for terrain elements that lie along mapping radar sweep lines which include the azimuth angle of the terrain following radar antenna,

terrain following processor means for developing from the slant range signals and the adjusted reflectivity signals which are stored in the profile line memory a terrain following radar intensity modulating signal, and

terrain following radar display means responsive to the terrain following radar intensity modulating signal and operative to develop a terrain following display of the simulation area which is radar visible.

4,198,763

DRYING METHOD AND APPARATUS

Kouzi Kurihara, Fukuyama, Japan, assignor to Kitagawa Iron Works Co., Ltd., Japan

Filed Feb. 21, 1978, Ser. No. 879,523

Claims priority, application Japan, Feb. 19, 1977, 52-17618

Int. Cl.[2] F26B *5/04*

U.S. Cl. 34—16.5 **9 Claims**

1. The method of drying a material, utilizing an apparatus which includes a sealable enclosure to receive the material, means for heating the atmosphere within the enclosure, means for reducing the pressure of the atmosphere within the enclosure, means for dampening the contents of the enclosure, and means within the enclosure for ascertaining the moisture content of a sample of the material, said method comprising the steps of:

(i) introducing material into the enclosure,

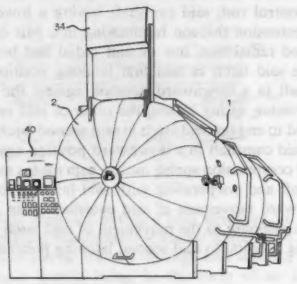
(ii) ascertaining the moisture content of a sample of the material in the enclosure,

(iii) operating the heating means to heat the atmosphere within the enclosure to a predetermined temperature

(iv) simultaneously with the heating of the contents of the enclosure, operating the dampening means to achieve a predetermined moisture content in the atmosphere within the enclosure at said predetermined temperature

(v) determining when the temperature of the material has reached a selected temperature lower than said predetermined temperature, and causing the heating to be stopped when said selected temperature has been reached

(vi) thereafter operating the pressure-reducing means for a period during which the temperature of the material becomes reduced by a selected value, and thereafter permitting the pressure within the enclosure to return to external atmospheric pressure



(vii) thereafter again ascertaining the moisture content of the sample of material to obtain a new moisture content value for comparison with the moisture content value obtained in step (ii) above, the sequence of steps (1) through (vii) being repeated a number of times until the moisture content value obtained by step (vii) of the last repetition represents a desired moisture content of the dried material.

4,198,764

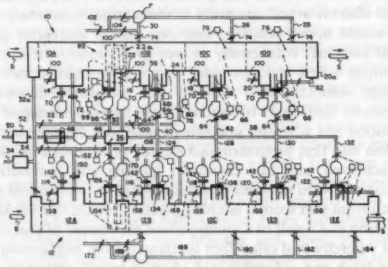
RADIANT HEATING APPARATUS FOR CURING COATED STRIP MATERIAL

Kenneth Ellison, 20 Avondale Cres., Markham, and Alan S. Whike, R.R. #1, Caledon East, both of Canada

Division of Ser. No. 732,165, Oct. 13, 1976, Pat. No. 4,140,467, which is a continuation-in-part of Ser. No. 585,198, Jun. 9, 1975, abandoned. This application Apr. 10, 1978, Ser. No. 894,820

Int. Cl.[2] F26B *21/06*

U.S. Cl. 34—32 **13 Claims**



1. A method for the heat treatment of a workpiece carrying a coating containing a vaporizable solvent which is oxidizable to provide at least part of the heat required for such heat treatment and which method comprises the steps of:

continuously moving such a workpiece through a plurality of zones of an oven to vaporize such solvent therein;

transferring solvent-carrying gases from such an oven and

delivering same to the inlet of an incinerator within said oven;

incinerating such solvent-carrying gases to oxidize solvent vapours contained therein so to provide incinerated gases at an elevated temperature and a reduced solvent content, and,

passing all such elevated temperature incinerated gases directly from the outlet of such incinerator through a radiant heater disposed within such an oven and adapted to receive heat from such incinerated gases and to radiate heat toward such a workpiece passing through such an oven.

4,198,765

SHOE DRYER WITH AN ORTHOPAEDIC MEANS

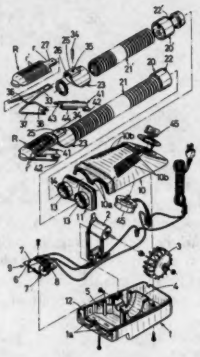
Toshiaki Miyamae, 2-16, 2-chome, Nishi-Iwata, Higashi-Osaka, Osaka 577, Japan

Filed Sep. 29, 1978, Ser. No. 947,016

Claims priority, application Japan, Oct. 21, 1977, 52-142386[U]; May 22, 1978, 53-68759[U]; May 23, 1978, 53-70098[U]; Jun. 19, 1978, 53-84446[U]

Int. Cl.² F26B *23/10*

U.S. Cl. 34—104 **2 Claims**



1. A shoe dryer with an orthopaedic means comprising a casing, a lid to be put thereon, a fan and a heating means housed in said casing, a partition wall having vents through which a quantity of air fed from said fan and heated by said heating means is divided into two streams having an equal air pressure and an equal quantity, said partition wall being fixedly held between edges of said casing and said lid, and flexible blow pipes each having an end connected to a connecting means detachably mountable to said wall through said edges of the casing and the lid, with the other end connected to a means for orthopaedically reforming a shapeless shoe to its original shape, and further comprising

(a) at least a pair of vents bored in said partition wall just in front of said heating means,

(b) a hood projected integrally from each of said vents on one side of said partition wall,

(c) groove formed adjacent to each of said edges of the casing and the lid,

(d) a semi-circular portion formed adjacent to said groove of said casing and said lid,

(e) circular flanges having a greater inner diameter than the outer diameter of said hood, being formed by said opposed semi-circular flange portions when said casing and said lid are engaged with one another,

(f) circular spatial rooms formed between said circular flanges and said hood in intercommunicable relation with said partition wall,

(g) each spatial room formed between opposite ends of said semi-circular flange portions in intercommunicable relation with said partition wall,

(h) a connecting means being in the form of a connecting ring rigidly fixed to one end of said flexible blow pipe, that has a greater inner diameter than the outer diameter of said hood but a smaller outer diameter than the inner diameter of said circular flange,

(i) a pair of projections formed integrally on the outer peripheral edge of said connecting ring, and

(j) construction wherein said connecting ring is detachably engageable to said vents of the partition wall through said circular spatial room and said spatial rooms of said circular flanges.

4,198,766

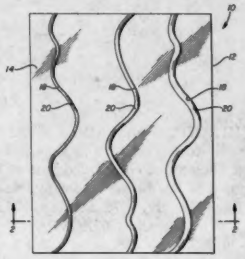
INTRAVENOUS TRAINING/DEMONSTRATION AID

Lawrence R. Camin, Dallas, Tex., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 21, 1978, Ser. No. 917,523

Int. Cl.² G09B *23/28*

U.S. Cl. 35—17 **11 Claims**



1. An intravenous training/demonstration aid, comprising:

a rigid base having a top surface and a bottom surface, said top surface having at least one undulating groove therein; and

a flexible blood vessel-simulating tube of substantially transparent construction removably seated in each undulating groove in said base to permit observation by a trainee of the interaction between an intravenous device and the walls of said tube.

4,198,767

RECORDING SYSTEM FOR LASER WEAPON SIMULATOR

Ronald W. MacPherson, Ste. Foy; J. Clement Ethier, Quebec, and J. A. Maurice Gravel, Ste. Foy, all of Canada, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 3, 1978, Ser. No. 921,374

Int. Cl.² F41J *1/16*

U.S. Cl. 35—25 **5 Claims**

1. In combination,

a laser beam weapon simulator,

a housing,

film means in said housing,

window means in said housing which is transparent to the laser beam from said weapon simulator,

the laser beam emanating from said weapon simulator striking the surface of said window means as a small spot,

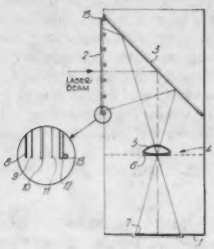
said window means being receptive of a target having a desired target pattern,

said window means further including graticule means provided with a grid pattern,

camera optical means in said housing for producing on said film means an image of said target pattern and of said spot,

illuminating means along the periphery of said graticule

means for illuminating the grid pattern whereby the illuminated grid pattern may be photographed by said camera means, and



filter means between said target and said camera optical means for blocking substantially ambient light from said film means and transmitting laser beam radiation.

4,198,768

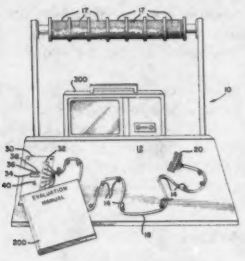
ELECTRONICS ASSEMBLY EVALUATOR

Richard E. Wahl, Rochester; John E. King, Fairport; William C. Becket, and Thomas W. Gannaway, both of Rochester, all of N.Y., assignors to The Singer Company, New York, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,635

Int. Cl.[2] G09B *19/00*

U.S. Cl. 35—29 R **6 Claims**



1. An electronics assembly evaluator for determining the skill and knowledge of a prospective electronics assembler comprising:

a wire harness fabrication board having a plurality of support spots around which wires may be strung in the fabrication of a wire harness;

a printed circuit board to which said wire harness may be connected;

a plurality of electronic components for mounting on said printed circuit board;

means for supplying step-by-step instructions for the fabrication of said wire harness and the placement of said electronic components on said printed circuit board; and

a power supply module to which said wire harness may also be connected for energizing said wire harness to said printed circuit board after said wiring instructions have been completed by said prospective electronics assembler, said module including means for determining whether said wire harness along with said printed circuit board have been assembled correctly.

4,198,769

BOOTS OF INJECTION MOLDED PLASTIC

Pietro L. Rigon, Vicenza, Italy, assignor to Rigon, S.P.A., Vicenza, Italy

Filed Apr. 10, 1978, Ser. No. 895,019

Claims priority, application Italy, Apr. 8, 1977, 64246/77[U]; Nov. 25, 1977, 85659 A/77; Dec. 30, 1977, 85677 A/77

Int. Cl.[2] A43B *13/28, 1/10*

U.S. Cl. 36—24.5 **1 Claim**

1. A ladies's boot made of extruded synthetic resin comprising:

a molded upper;

a molded bottom joined to said upper and having a sole portion and a heel portion, said heel portion having a cavity therein;

a resin core disposed in the cavity in said heel portion and having a lift in the form of plug means integral therewith for closing off the lower end of said heel portion;

a reinforced rigid insole member fitted over the heel portion and running therefrom over about one-third of the sole portion; and

screw means extending through said reinforced insole into said resin core for securing said reinforced insole to the heel portion so as to stiffen the entire sole-heel structure of the boot to prevent deformation of the heel portion during use.

4,198,770

DEVICE FOR FIXING HEELS

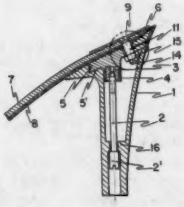
Fernando Orea Mateo, Edificio Torres Blancas-Avda. de America, 37,945, Madrid, Spain

Filed Jun. 21, 1978, Ser. No. 917,647

Claims priority, application Spain, Feb. 9, 1978, 233.843[U]; Feb. 9, 1978, 233.844[U]

Int. Cl.[2] A43B *21/36*

U.S. Cl. 36—42 **5 Claims**



1. An adjustable heel assembly for attachment to a shoe inner sole having an inner shank, said heel assembly comprising:

a hollow heel having an upper portion with a recess therein and a lower portion having a transverse partition, said partition having therethrough an orifice;

a flat cover fitting within said recess, said flat cover having depending therefrom an integral projection having therein a blind hole, said flat cover adapted to fit beneath a shoe inner sole having an inner shank;

a plate adapted to fit over the shoe inner sole at a position above said flat cover;

joining means, adapted to extend through the inner sole and the inner shank thereof, for connecting said plate to said inner cover and for thereby retaining the inner sole and inner shank therebetween; and

means for removably attaching said heel to said flat cover and for adjusting the tension of attachment therebetween, said attaching means solely comprising an elongated stem extending through said heel from said bottom portion thereof, said stem having a free upper end threaded into said blind hole of said projection of said flat cover, and said stem extending through said orifice of said partition and having a lower end with a head abutting said partition.

4,198,771

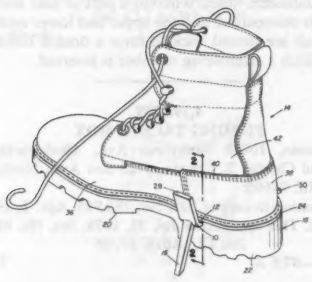
CLIMBING AID

Lloyd B. Foster, Sturgeon Bay, Wis., assignor to The Bootmakers of Sturgeon Bay, Inc., Sturgeon Bay, Wis.

Filed Apr. 10, 1978, Ser. No. 894,685

Int. Cl.[2] A43B *23/00*; A43C *15/04, 15/06*

U.S. Cl. 36—136 **12 Claims**



1. A climbing aid, comprising:

a boot having a sole assembly,

said sole assembly including

a middle sole, and

an outsole having a heel,

a slot extending transversely said sole assembly,

said slot being defined by the bottom surface of said middle sole and a groove in the top surface of said outsole above said heel, and

a rigid support bar adapted to be inserted in said slot and having a climbing spike adjacent one end thereof,

said spike extending downwardly from said bar along the inner side of said heel when said bar is inserted in said slot.

4,198,772

BINDING STRAP

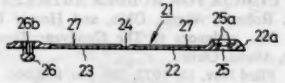
Akira Furutu, Tokyo, Japan, assignor to Japan Banoc'k Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 749,897, Dec. 13, 1976, abandoned. This application Apr. 10, 1978, Ser. No. 894,707

Claims priority, application Japan, Sep. 4, 1976, 51/119060[U]

Int. Cl.[2] G09F *3/14*

U.S. Cl. 40—21 R **1 Claim**



1. A binding strap for use in tagging fur pelts by connection to an opening in the pelt, such as an eye-socket, comprising a one-piece molding of a flexible synthetic resin having a substantially thin, elongated strip-like body including continuous first and second body portions connected by a thin folding portion, at least one of said first and second portions having a guard frame on a surface thereof on which an indication is given, the folding portion being a portion of the synthetic resin having a thickness less than that of said first and second body portions, said first body portion having a first joining portion disposed at the end thereof opposite the folding portion and being an aperture having elastically extendible projective brims on the inner periphery thereof; and said second body portion having a second joining portion disposed at the end thereof opposite the folding portion and adapted to cooperate and lock with said first joining portion to fasten said binding strap, said second joining portion being a projection having a substantially cylindrical portion having a hollow projection therein, said cylindrical portion being connected at a base thereof to said second body portion, crescent-shaped apertures being provided around the base, said cylindrical portion being connected at the other end thereof to a head portion, said head portion having a diameter greater than that of said cylindrical portion, said first and second joining portions being permanently attached to said first and second body portions, respectively, and at least said first body portion is provided with a guide fluke at an end portion thereof, said guide fluke being in the form of a dome-shaped wedge having a sloped portion which becomes gradually thinner toward the end thereof, said sloped portion extending continuously from an upper wall edge of said first joining portion to the end of said guide fluke.

4,198,773

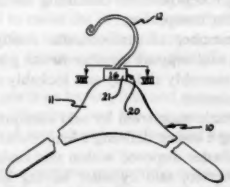
TALLY FOR ARTICLE DISPLAYS

John H. Batts, and Judd F. Garrison, both of Grand Rapids, Mich., assignors to John Thomas Batts, Inc., Zeeland, Mich.

Division of Ser. No. 647,008, Jan. 2, 1976, Pat. No. 4,123,864. This application Sep. 26, 1977, Ser. No. 836,654

Int. Cl.[2] G09F *3/00*

U.S. Cl. 40—322 **8 Claims**



1. A blank of tallies for use with article display devices, said blank having an elongated body of a material subject to fracture upon bending, said body being tubular and having thin,

circular inner and outer walls, said inner wall including an inwardly projecting tally indexing rib extending axially the length thereof; said body defining a plurality of cuts spaced lengthwise of said body dividing said body into a plurality of axially spaced segments; said segments being attached one to another only by said rib whereby said segments, when needed, can be separated by fracturing said rib.

4,198,774

INDICIA FOR RUBBER ARTICLES

Charles W. Roberts, Akron, Ohio, and Homer B. Lowther, Danville, Va., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 18, 1977, Ser. No. 852,996
Int. Cl.[2] G09F *21/04*
U.S. Cl. 40—587 46 Claims

1. A colored rubber article including an indicium comprising:

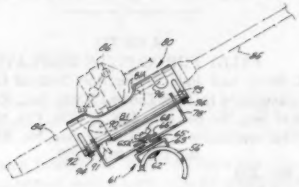
at least eight lineal projections having their bases integral of said article, said projections being substantially straight and parallel to one another, and being continuous within the configuration of said indicium, said projections having substantially identical cross sections, said cross sections being taken normal to the longitudinal axes of said projections, the material of said rubber article and said indicium being of generally the same color.

4,198,775

FISHING ROD HOLDER

Theodore Leisner, P.O. Box 192, Chiloquin, Oreg. 97624

Continuation-in-part of Ser. No. 827,355, Aug. 24, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 938,379
Int. Cl.[2] A01K *97/10*
U.S. Cl. 43—21.2 10 Claims



1. A fishing rod holder for mounting on the gunwale of a boat, said holder comprising,

a support member of semi-circular configuration, means mounting said support member to the gunwale,

a clamping assembly slidably and lockably disposed on said support member,

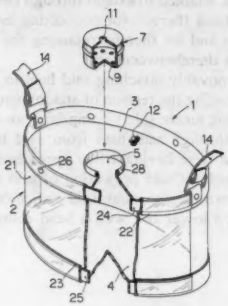
a rod receptacle supported by said clamping assembly and comprising a casing defining a lengthwise extending open area, a cylinder disposed within said casing and rotatable relative thereto, said cylinder having lengthwise orientated open areas substantially registerable with the casing open area to permit lateral insertion of a rod handle into cylinder engagement whereafter cylinder rotation will cause said casing to close the cylinder openings to assure rod handle retention.

4,198,776

PORTABLE CONTAINER FOR FISH

Shuzo Tomita, 9-1-35 Kyoeicho, Ohbu-shi Aichi-ken, Japan

Filed Feb. 6, 1978, Ser. No. 875,457
Claims priority, application Japan, Feb. 5, 1977, 52-11868; May 20, 1977, 52-6545[U]; Jul. 28, 1977, 52-122504[U]; Sep. 11, 1977, 52-122504[U]
Int. Cl.[2] A01K *97/00*
U.S. Cl. 43—56 3 Claims



1. A portable container for transporting live fish comprising:

a top wall;

a bottom wall;

a side wall interconnecting said top and bottom walls to form a sealed container;

a setting opening formed in said top wall communicating with the interior of said sealed container;

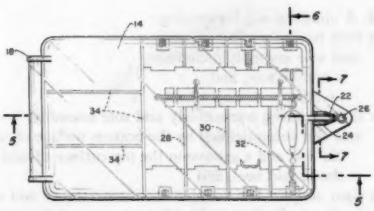
a vertically positioned cylindrical ventilating pipe adapted to be inserted in sealing engagement in said setting opening formed in said top wall, said ventilating pipe being comprised of a cover plate closing an upper end of said cylindrical ventilating pipe and a bottom plate closing a lower end of said cylindrical ventilating pipe, said cover plate including a single, small centrally positioned vent opening and said bottom plate including a plurality of small induction holes, wherein a part of said sealed container is transparent, and the upper and lower ends of said side wall are turned back to form a double construction into which a reinforcing member is inserted.

4,198,777

FISHING TACKLE BOX

Harold Cruzan, 10048 Sunnybrae Ave., Chatsworth, Calif. 91311, and Charles T. Cruzan, 6723 Ben Ave., North Hollywood, Calif. 91605

Continuation-in-part of Ser. No. 783,915, Apr. 1, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,379
Int. Cl.[2] A01K *97/06*
U.S. Cl. 43—57.5 A 7 Claims



1. A container for storing fishing tackle comprising:

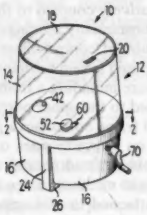
a substantially rectangular frame;
a first fixed planar partition extending across said frame and creating equal areas bordered on all sides by said frame;
a pair of covers for covering the top and bottom of said rectangular frame;
hinge means hinging said covers to said frame;
latch means opposite the hinge means for holding the covers securely closed;
a plurality of partitions perpendicular to said first partition separating equal areas into a plurality of substantially equal compartments;
socket means attached to the sides of said frame at the ends of each compartment;
post means attached to said frame adjacent to the end of each socket;
said post means being at the opposite end of the socket on the opposite sides of the frame;
a coil spring having a loop on one end and a hook on the other end installed in said socket means;
said loop passing over said post means for retaining said spring in said socket;
extension means on each socket extending towards said compartment and adapted to flex said coil spring at essentially a right angle;
means on the opposite end of said compartments for engaging the hooks of said lures;
whereby a lure may be retained by engaging the hook of said coil spring in the eyelet of said lure and bending said spring over said extension whereby said compartment may accommodate various size lures.

4,198,778

AMUSEMENT DEVICE

Howard J. Morrison, Deerfield, and Donald K. Fletchic, Rolling Meadows, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Mar. 16, 1978, Ser. No. 886,997
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—4 **17 Claims**



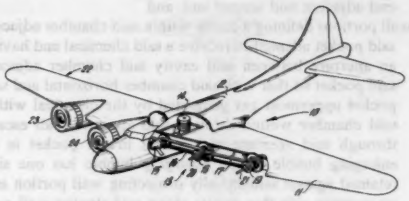
1. A toy bank, comprising:
a transparent upper housing portion;
means for receiving tokens, such as money or the like;
a removable, opaque housing portion for receiving and storing tokens;
connecting means for aligning and joining said housing portions;
a transverse wall at said connecting means having at least one aperture communicating between said housing portions; and
propulsion means for engaging said tokens on said wall and directing said tokens through the aperture into the lower housing portion.

4,198,779

MODEL AIRCRAFT PROPULSION SYSTEM

Robert W. Kress, 27 Mill Rd., Lloyd Harbor, N.Y. 11746

Filed Jun. 19, 1978, Ser. No. 916,343
Int. Cl.[2] A63H *27/00*
U.S. Cl. 46—78 **2 Claims**



1. Multipropeller propulsion means for model aircraft comprising
an engine mounted on said aircraft,
a plurality of propellers on said aircraft,
positive synchronous drive means between said engine and said propellers including
a toothed pulley driven by said engine,
a plurality of toothed driving pulleys,
each propeller operatively connected to a corresponding toothed driving pulley,
and toothed belt means between said toothed driven pulley and
said toothed driving pulleys for positively rotating said propellers in unison.

4,198,780

WATER ACTIVATED TOY

James F. Kubiatowicz, Minneapolis, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.

Filed Oct. 13, 1977, Ser. No. 841,718
Int. Cl.[2] A63H *23/10*
U.S. Cl. 46—92 **7 Claims**

1. A toy adapted to be activated by gas released from a wetted chemical to cause the toy to repeatedly rise and sink in a liquid in which it is submerged, said toy comprising walls of a material having a density greater than that of a said liquid and including:
elongate wall portions having first and second ends, defining an elongate chamber, and having an opening allowing liquid to enter said chamber when said toy is submerged therein;
projecting wall portions projecting outwardly from said elongate wall portion to define a pocket defining into said elongate chamber and centered generally over the center of gravity of said toy when said elongate chamber is horizontally disposed and said pocket is uppermost, said projecting wall portions including a generally radially

extending wall portion adjacent the first end of said elongate wall portion and a sloping wall portion sloped from the outermost portion of said pocket toward the center of said chamber and said second end, both said radially extending wall portion and said sloping wall portion being disposed generally transverse of said elongate chamber and said sloping wall portion having an orifice through its end adjacent said second end; and

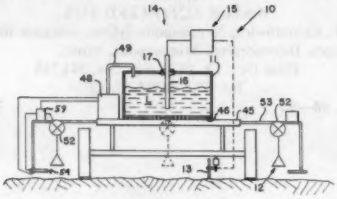
wall portions defining a cavity within said chamber adjacent said pocket adapted to receive a said chemical and having an aperture between said cavity and chamber adjacent said pocket so that with said chamber horizontal and said pocket uppermost gas generated by the chemical within said chamber wetted through said aperture wall escape through said aperture and collect in the pocket in an enlarging bubble which enlarging bubble has one side retained against said radially projecting wall portion and an opposite side that moves along said sloping wall portion to shift the center of buoyancy of the bubble toward said second end away from the center of gravity of said toy so that the enlarging bubble will both cause the toy to rise in the liquid and the second end of the toy to lift upwardly relative to its first end until the bubble moves along the sloping wall portion and escapes through said orifice, the toy sinks and the cycle repeats.

4,198,781

PLANT DESTRUCTION UTILIZING ELECTRICALLY CONDUCTIVE LIQUID

Willis G. Dykes, Vicksburg, Miss., assignor to Lasco, Inc., Vicksburg, Miss.

Filed Aug. 3, 1978, Ser. No. 930,857
Int. Cl.[2] A01M *21/04*
U.S. Cl. 47—1.3 **18 Claims**



1. A machine for destroying plants with electricity, comprising

a tank adapted to hold electrically conductive liquid therein,

means for placing conductive liquid in said tank at high electrical potential, including a high voltage source of electricity,

nozzle means for spraying high potential electrically conductive liquid on plants to be destroyed for transferring electricity from said high voltage source to ground through plants sprayed thereby, and

means for grounding said high voltage source.

4,198,782

CONTROL OF AGRICULTURAL PESTS BY CONTROLLED RELEASE PARTICLES

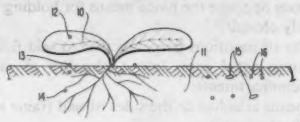
Agis F. Kydonieus, and Seymour Hyman, both of New York, N.Y., assignors to Herculite Protective Fabrics Corporation, New York, N.Y.

Continuation of Ser. No. 722,235, Sep. 10, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 881,961
Int. Cl.[2] A01B *79/02*; A01C *1/00*; A01M *1/00*; A01N *17/00*
U.S. Cl. 47—58 **30 Claims**

1. A method for the control of agricultural pests comprising producing polymeric controlled insecticide release particles by granulating a laminated sheeting material comprising

(i) a first solid, non-porous polymeric sheet having adhered thereto

(ii) a polymeric core film containing an insecticide selected from the group consisting of Diazinon and Thimet, and having on the opposite side of the first sheet, adhered thereto



(iii) a second solid, non-porous polymeric sheet

said insecticide migrating by molecular migration through at least one of said sheets to become available on at least one surface of said particles; and

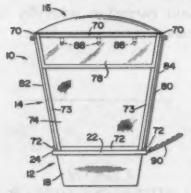
applying said particles to a location where it is desired to control pests.

4,198,783

HYDROPONIC APPARATUS

Frank W. Leroux, 5575 Williamsdale Ct., Seminole, Fla. 33541

Filed Nov. 14, 1977, Ser. No. 851,043
Int. Cl.[2] A01G *31/02, 9/16, 9/24*
U.S. Cl. 47—60 **13 Claims**



1. An enclosed hydroponic apparatus for the use in growing plants comprising a free standing reinforced base including a substantially rectangular lower tray comprising a bottom wall having side walls extending upwardly therefrom and a substantially rectangular upper tray including a bottom wall having side walls extending upwardly therefrom comprising a plant compartment operatively coupled to the upper portion of said side walls of said substantially rectangular lower tray to cooperatively form a nutrient compartment therebetween, a nutrient feed supply disposed in said substantially rectangular lower tray, a plant enclosure including a frame to support a plurality of partitions attached to the upper portion of said side walls of said lower tray said frame comprises a pair of upper and lower channels disposed on opposite sides of said enclosed hydroponic apparatus held in fixed spaced relationship relative to each other by upright members extending therebetween, end partitions fixedly attached to said upper and lower channels and side panels comprising of first and second panel members disposed on opposite sides of said frame slidably attached to said upper and lower channels the distance between said pair of upper channels being substantially greater than the distance between said pair of lower channels such that said first and second panel members diverge outwardly from said lower channels to said corresponding upper channels, a heater system including a heater disposed within said nutrient compartment in combination with an inlet and outlet heat ports formed in opposite ends of said upper tray and an inlet and outlet heat channel extending upwardly from said inlet and outlet ports respectively into said plant enclosure to provide circulation of heated air by convection through said plant enclosure and at least one convex light absorbing element comprising a frosted bubble-like member mounted on the upper portion of said

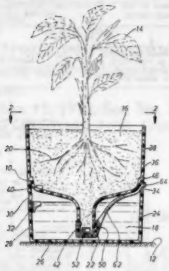
frame to intercept and direct light to the plants disposed within said plant enclosure.

4,198,784

VESSEL FOR SUPPORTING AND AUTOMATICALLY PROVIDING LIQUID TO VEGETATION

Haven L. Sukert, 6500 W. 43rd, Suite 406, Houston, Tex. 77092

Filed May 22, 1978, Ser. No. 908,005
Int. Cl.² A01G *27/00*
U.S. Cl. 47—79 **10 Claims**



1. A vessel for supporting and automatically providing liquid to vegetation, comprising:

(a) a lower container for storing a reservoir of liquid;

(b) a vegetation supporting upper container having upper and lower portions of relatively larger and smaller cross-sectional areas respectively, said upper portion engageable with said lower container, said lower portion extending from said upper portion and having a shaped end, said lower portion also defining near said end at least one passageway extending into said lower container for conveying a flow of liquid to the vegetation; and

(c) a flow regulator movably secured to said lower portion and defining at least one flow port of dimensions having a selected relationship to the cross-sectional dimensions of said passageway, said flow regulator configured substantially in the shape of said end to selectively enable at least partial alignment of said passageway and said flow port upon relative motion between said lower portion and said flow regulator, said flow regulator further including means actuable from a position external of said vessel for moving the flow regulator relative to said portion, thereby permitting the regulation of the flow of said liquid without separating the upper container from the lower container.

4,198,785

MOVABLE THRESHOLD DOOR SEAL

Walter J. Marulic, Gary, and Jack E. Gutridge, Dyer, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 10, 1978, Ser. No. 949,821
Int. Cl.² E06B *7/20*
U.S. Cl. 49—304 **4 Claims**

1. A door for a railway vehicle, the improvement comprising;

a door,

a frame surrounding said door,

said frame having spaced sides providing an opening for movement of the door between an open and closed position,

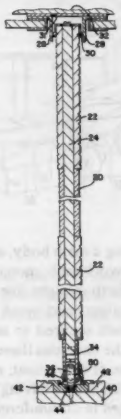
roller means for supporting said door and for guiding the door for movement into and from the door opening;

threshold means at the bottom of said door opening,

said threshold means having recessed track means to receive and guide the bottom portion of the door during movement,

seal means includes a flexible member having a longitudinally extending connecting portion on one side thereof,

means connecting said connecting portion of the seal to said threshold means whereby said seal member is movable from a first position covering said track to a second position wherein said seal member is raised vertically from



said covering position and is in resilient biasing engagement with one side of said door,

said flexible seal member having an end portion thereof raised vertically from said threshold, and

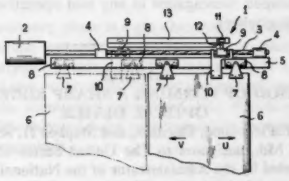
means on said door, initially on movement of the same, engaging said end portion of said seal to raise the same and whereby the same is moved to its second position.

4,198,786

LOCKING DEVICE FOR A SLIDING DOOR

Bernard Monot, Aubervilliers, France, assignor to Faiveley S.A., Saint Ouen, France

Filed Apr. 25, 1978, Ser. No. 899,852
Claims priority, application France, Feb. 16, 1978, 78 04421
Int. Cl.² E05F *11/34*
U.S. Cl. 49—362 **21 Claims**



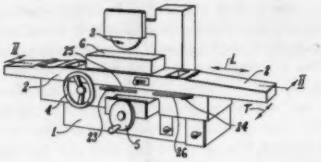
1. A device for locking a door, especially a sliding door which is driven by a motor and comprises at least one leaf coupled to a nut mounted on an endless screw which is driven in rotation in order to effect opening and/or closing of the door, said nut being displaced in translational motion within a guide which prevents rotational motion, wherein said locking device comprises means for interrupting the translational displacement of the guided nut at the end of travel and for permitting angular rotation of said nut with said endless screw, means for limiting the angular displacement of said nut and finally means for limiting the translational motion of the nut if said nut is displaced along said screw and no longer engaged within said guide.

4,198,787

TRAVERSING MECHANISM

Bernard M. Hadaway, Melbourne, Australia, assignor to Repco Limited, Australia

Filed Oct. 26, 1978, Ser. No. 954,856
Claims priority, application Australia, Nov. 1, 1977, 2254/77
Int. Cl.[2] B24B *47/02*; F16H *19/06*
U.S. Cl. 51—231 **9 Claims**



9. In a machine having a main body, a table guide secured to said main body, and a work table mounted on said table guide for relative back and forth straight line movement; traversing mechanism for controlling said work table movement and including; an endless belt secured to said main body and arranged so that each of the two runs thereof extend substantially parallel to said table line of movement; a coupling wheel rotatably mounted on said table and having a plurality of radially projecting lobes arranged in circumferentially spaced relationship; said wheel being located between said belt runs and being rotatable in one direction to sequentially adopt each of a plurality of operative positions in which a respective said lobe engages one of said belt runs and the other said belt run remains unengaged by said wheel, the engagement of said wheel alternating from one said belt run to the other at each change of said operative position; a pair of backing surfaces, each of which is located on the outside of a respective said belt run in opposed relationship to said wheel so that a section of said run can be clamped between said wheel and the respective said backing surface when said wheel is in each said operative position; means mounting each said backing surface on said work table for movement towards and away from said coupling wheel; and an actuator mounted on said work table for movement between an engage position in which it influences each said backing surface inwardly for clamping engagement with said belt, and a disengage position in which it releases said backing surfaces for outward movement such that a said belt run cannot be clamped thereagainst in any said operative position of the coupling wheel.

4,198,788

METHOD OF FORMING A SHARP EDGE ON AN OPTICAL DEVICE

Charles M. Fleetwood, Odenton, and Stephen H. Rice, Waldorf, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 28, 1978, Ser. No. 929,088
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—283 R **15 Claims**

1. A method of forming a sharp edge on an optical device comprising the steps of:

placing said optical device in a holding device;

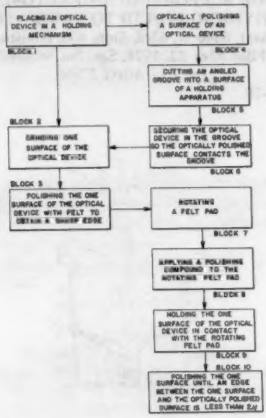
grinding one surface of said optical device until one surface thereof and a surface of said holding device are co-planer; and

polishing said one surface of said optical device and said surface of said holding device with felt until an edge of said one surface of said optical device adjacent to said surface of said holding device has a desired sharpness, said step of polishing including the steps of;

rotating said felt,

holding said optical device and said holding device from rotating,

aligning said edge so that said edge is a trailing edge to said rotation of said felt,


PLACING AN OPTICAL DEVICE IN A HOLDING MECHANISM
BLOCK 1
OPTICALLY POLISHING A SURFACE OF AN OPTICAL DEVICE
BLOCK 4
CUTTING AN ANGLED GROOVE INTO A SURFACE OF A HOLDING APPARATUS
BLOCK 5
BLOCK 2
GRINDING ONE SURFACE OF THE OPTICAL DEVICE
SECURING THE OPTICAL DEVICE IN THE GROOVE SO THE OPTICALLY POLISHED SURFACE CONTACTS THE GROOVE
BLOCK 6
BLOCK 3
POLISHING THE ONE SURFACE OF THE OPTICAL DEVICE WITH FELT TO OBTAIN A SHARP EDGE
ROTATING A FELT PAD
BLOCK 7
APPLYING A POLISHING COMPOUND TO THE ROTATING FELT PAD
BLOCK 8
HOLDING THE ONE SURFACE OF THE OPTICAL DEVICE IN CONTACT WITH THE ROTATING FELT PAD
BLOCK 9
BLOCK 10
POLISHING THE ONE SURFACE UNTIL AN EDGE BETWEEN THE ONE SURFACE AND THE OPTICALLY POLISHED SURFACE IS LESS THAN 5μ

holding said one surface of said optical device and said holding device in contact with and off-set from the center of said rotating felt, and

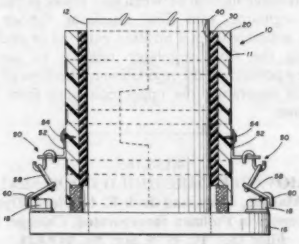
applying pressure to said optical device and said holding device.

4,198,789

SLEEVE ASSEMBLY

John H. Wheeler, Dallas, Tex., assignor to The Texacone Company, Dallas, Tex.

Continuation of Ser. No. 721,984, Sep. 10, 1976, Pat. No. 4,089,137. This application Dec. 12, 1977, Ser. No. 859,471
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—289 R **4 Claims**



1. A method of sanding a piston rod reciprocating in a hydraulic cylinder or the like to counteract the deterioration of said piston rod as a result of operation and other causes, permitting continuous operation of said piston rod during the sanding operation, comprising the steps of:

providing an annular member comprising substantially diametrically opposed half portions;

providing mating nonaxial surfaces on the opposed edges of the half portions of the annular member;

providing the inner surface of the annular member with an abrasive layer;

positioning the half portions of the annular member around the outer circumference of a piston rod which requires sanding;

providing clamping means adapted to secure the annular member about the outer circumference of the piston rod;

securing the clamping means around the outer circumference of the annular member to retain the half portions thereof with the mating nonaxial surfaces engaging one another and to retain the abrasive layer thereof in interference contact with the outer circumference of the piston rod;

limiting the axial motion of the annular member with respect to the hydraulic cylinder;

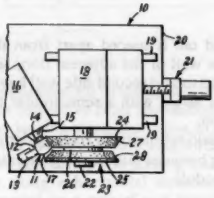
and reciprocating the piston rod within the hydraulic cylinder with the abrasive layer of the annular member thereby sanding the outer circumference of the piston rod.

4,198,790

METHOD FOR FINISHING SPHERICAL ROLLERS

Paul Gruber, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jan. 11, 1979, Ser. No. 2,660
Int. Cl.[2] B24B *1/00, 5/36*
U.S. Cl. 51—289 R **2 Claims**



1. A method of grinding a plurality of spherical forms on a spherical roller, comprising the following steps:

(a) supporting a roller diameter on locating shoes;

(b) driving a first end of said roller with a magnetic driver;

(c) supporting first and second grinding wheel forms on a common rotatable grinding wheel spindle;

(d) radially feeding said first wheel form relatively toward said roller;

(e) grinding a first spherical convex form on said supported diameter while radially feeding said first wheel form;

(f) axially shifting said wheel spindle relative to said roller after grinding said first spherical form;

(g) radially feeding said second form relatively toward said workpiece after axially shifting said wheel spindle; and

(h) grinding a second spherical convex form on the second end of said roller while radially feeding said second wheel form.

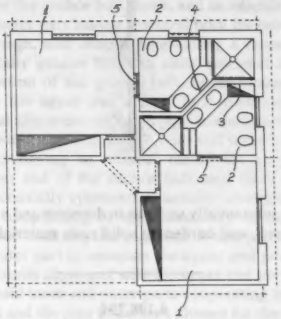
4,198,791

STANDARD MODULES FOR ARCHITECTONIC COMPOSITIONS

Methodios Kalkaslief, Rua Berlioz, 474, Sao Paulo, SP, Brazil

Continuation of Ser. No. 768,836, Feb. 15, 1977, abandoned. This application May 8, 1978, Ser. No. 903,474
Claims priority, application Brazil, Apr. 28, 1976, 7602636
Int. Cl.[2] A47K *3/16*
U.S. Cl. 52—35 **1 Claim**

1. An angular construction module comprising; a double bathroom unit for use as a corner of a building and having four sidewalls enclosing the bathroom unit, a dividing wall dividing the unit into two equal and symmetrical bathroom spaces, said dividing wall having a diagonal wall portion diagonally dividing the unit, said bathroom spaces having lavatories back-to-back along said diagonal wall portion; a first bedroom constructed with one sidewall thereof in common with an inner sidewall of said bathroom unit and a door access in the common sidewall for entry into one of the bathroom spaces; a second bedroom constructed with one sidewall thereon in common with another inner sidewall of said bathroom unit and a door access in the common sidewall for entry into the other bathroom space, the other sidewalls of the double bathroom unit meeting at 90° being free of doors and defining outermost



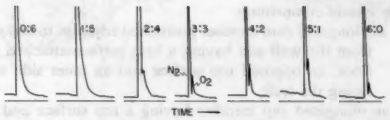
corner walls of a building, and each bedroom having an outer wall contiguous with a corresponding outer wall of said bathroom unit whereby the module defines an external corner of a building.

4,198,792

CHELATE-MODIFIED POLYMERS FOR ATMOSPHERIC GAS CHROMATOGRAPHY

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Warren W. Christensen; Ludwig A. Mayer, both of San Jose, and Fritz H. Woeller, Sunnyvale, all of Calif.

Filed Jun. 30, 1978, Ser. No. 921,626
Int. Cl.[2] C08J *9/40, 3/10;* B01D *53/20*
U.S. Cl. 521—55 **10 Claims**



1. As the stationary phase in a gas chromatograph apparatus, a polymer-chelate complex comprising (1) a microporous crosslinked polymer matrix consisting essentially of a copolymer of at least one monocyclic divinyl compound and at least one monocyclic monovinyl compound, into which is embedded (2) a chelate selected from cobalt and iron inorganic complexed ion compounds.

4,198,793

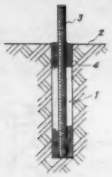
METHOD OF PLANTING ROD-SHAPED MEMBER IN FOUNDATION

Takeshi Sato, Kobe; Isao Sakamoto, Takarazuka; Katsuaki Okamoto, Kobe, and Hiroji Tada, Himeji, all of Japan, assignors to Nippon Jikkou Kabushiki Kaisha, Kobe, Japan

Filed Aug. 15, 1978, Ser. No. 933,745
Int. Cl.[2] E02D *5/74*
U.S. Cl. 52—166 **9 Claims**

1. A method of planting a rod-shaped member in a foundation, comprising the steps of forming a hole which is greater in cross-section than said rod-shaped member in said foundation,

putting said rod-shaped member in said hole, filling the remaining space in said hole with a plurality of ball-like members



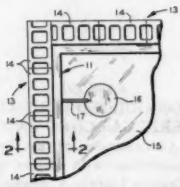
which are substantially uniform in diameter and a liquid curing resin material, and hardening solid resin material.

4,198,794

METHOD AND APPARATUS FOR DRAINING A BUILDING STRUCTURE

Lester M. Younts, Jr., 1538 N. Cove Blvd., Toledo, Ohio 43606

Filed Aug. 24, 1978, Ser. No. 936,218
Int. Cl.[2] E04B *1/70*; E04F *17/00*
U.S. Cl. 52—169.5 **11 Claims**



1. A drainage system for a building structure, the structure having a footing, at least one upstanding wall supported on the footing and a floor having at least a portion of the periphery thereof supported on the footing at a junction with the wall, the system comprising:

an elongated dam member positioned adjacent to and spaced from the wall and having a base surface attached to the floor, an opposed top surface and an inner side surface facing the wall;

an elongated cap member having a top surface and being removably positioned between said dam member inner side surface and the wall and spaced above the floor to define an enclosed channel with said dam member, the floor and the wall whereby water leaking through the wall-floor junction is retained in said channel; and

a sealant material covering said dam member top surface and said cap member top surface to seal the wall-cap member junction and the cap member-dam member junction against leakage of water from said channel.

4,198,795

STAINLESS STEEL FLOORING

Thomas O. Barnidge, Saint Louis, Mo., assignor to Barnidge, Inc., St. Louis, Mo.

Filed May 15, 1978, Ser. No. 905,975
Int. Cl.[2] B44D *5/08*
U.S. Cl. 52—180 **6 Claims**

1. A modular floor unit comprising:

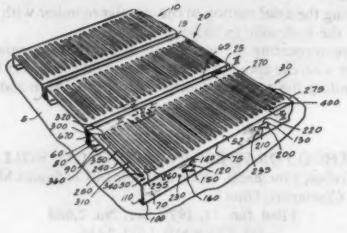
a piece of selected and appropriately shaped sheet metal;

said piece of sheet metal being formed into a substantially U-shaped structure having a first and a second supporting side wall with a connected, substantially flat, central weight supporting member;

said weight supporting member having formed therein a plurality of drainage slots;

said first side wall having formed therein an interlocking slot;

said second side wall having formed therein an interlocking tab spatially located so as to fit within an interlocking slot of an adjacent floor section such that said second side wall



having said tab is spaced apart from the corresponding slotted side wall of the adjacent floor section;

said tab affixed to said second side wall having a substantially rectangular shape with a semicircular tab affixed to one side thereon;

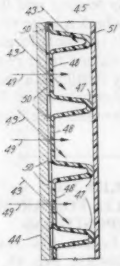
the width of said substantially rectangular shape determining the spacing between said flooring module and the adjacent flooring module.

4,198,796

THERMAL INSULATION STRUCTURE

Kenneth J. Foster, Dedham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 7, 1977, Ser. No. 831,307
Int. Cl.[2] E06B *3/28*
U.S. Cl. 52—203 **17 Claims**



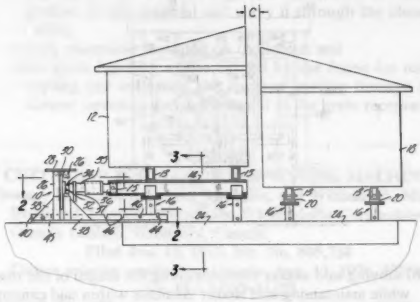
1. A flexible thermal insulation structure which comprises a flat plastic sheet, a layer of plastic cells attached to said flat sheet, ribbing support for each cell on said flat sheet and a transparent adhesive layer on a first surface of said cells opposite the surface of said cells attached to said flat sheet, each of said cells having a depth and a major diameter of between about ¼ inch and 1¼ inch, said structure adapted to be adhered to window glass and having a sufficiently low mass as to impose substantially no mechanical stress on said window glass, said structure being sufficiently flexible as to impose substantially no mechanical stress on said window glass due to temperature changes at the interface between said adhesive and said window glass and said cells having walls positioned to provide a common support or ribbing for adjacent cells.

4,198,797

METHOD AND FIXTURE FOR LATERAL AND LONGITUDINAL POSITIONING OF MOBILE OR MODULAR HOME UNITS

Bernard D. Soble, 19151 Berkley Ave., Detroit, Mich. 48221

Filed May 1, 1978, Ser. No. 901,539
Int. Cl.[2] E04H *1/12;* E02D *27/32;* B65G *7/02*
U.S. Cl. 52—299 7 Claims



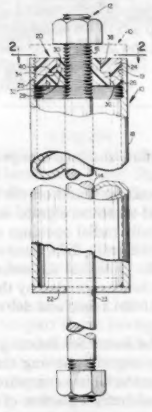
1. A fixture arrangement for laterally adjusting the position of a structure with respect to fixed foundation members, said fixture comprising: jacking means including an output member adapted to be moved to exert a positioning force; fixture means including a bracket supporting said jacking means to exert said positioning force along a horizontal direction; a temporary support beam disposed on a pair of said foundation members and on which said structure is adapted to be directly disposed; means producing shifting movement of said temporary support beam and said structure carried thereby in response to operation of said jacking means; rail means drivingly connected to said jacking means and adapted to extend into engagement with one of said foundation members beneath said structure to resist the reaction force generated by said jacking means, whereby said temporary beam may be shifted with said structure directly supported thereon by said jacking means.

4,198,798

ANCHOR BOLT SLEEVE

Charles E. Haydock, 390 Ridgefield Rd., Wilton, Conn. 06897

Filed Jun. 22, 1977, Ser. No. 809,121
Int. Cl.[2] E04B *1/41*
U.S. Cl. 52—699 15 Claims



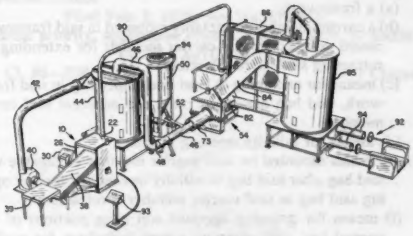
1. An adjustable sleeve for an anchor bolt having an axially elongated shank threaded at its upper end, said sleeve comprising a cylindrical pipe for receiving the anchor bolt therethrough and having an inside diameter substantially larger than the diameter of the anchor bolt shank, and an adapter assembly including an outer part having a central bore for receiving the bolt therethrough, said central bore having a cross sectional area substantially greater than the cross sectional area of an associated portion of the anchor bolt, means connecting the outer part to the upper end of said pipe with said bore in general coaxial alignment with said pipe, said adapter assembly including an inner part engageable with said outer part within said bore and having an internal thread for engaging the threaded upper end of the anchor bolt, said inner and outer parts having coaxially symmetrical annular co-engaging bearing surfaces cooperating in complementary co-engagement with each other in all angular positions of said inner part relative to said outer part to maintain the upper end portion of of said pipe in coaxial alignment with the upper end portion of the anchor bolt, said inner and outer parts cooperating in assembly with said bolt and the pipe to define a closure for the upper end of said pipe, said inner part in engagement with said outer part having a portion thereof exposed at the upper end of said bore and externally accessible at said upper end.

4,198,799

APPARATUS FOR MAKING EXPLODED CELLULOSIC FIBER INSULATION

Spencer C. McGrath, Vancouver, Wash., assignor to Cel-Cor Industries, Inc., Portland, Oreg.

Filed Mar. 13, 1978, Ser. No. 885,682
Int. Cl.[2] B02C *13/288*
U.S. Cl. 53—121 14 Claims



1. Apparatus for making exploded fiber insulation from paper comprises:

(a) preshredder means for shredding the paper into randomly sized paper segments;

(b) a blower connected to said preshredder means and arranged to evacuate said paper segments from said preshredder and to distribute them intermixed with air;

(c) a surge bin connected to said blower arranged to receive said paper segments and air, including separator means for separating said paper segments from said air and allowing them to accumulate in said surge bin;

(d) conveyor means associated with said surge bin for delivering a measured amount of said paper segments therefrom;

(e) a duct connected at one end to said surge bin in a manner for receiving said air, and having means for entraining said shredded paper from said conveyor means into said air;

(f) chemical dispensing means interconnected to said duct downstream of said surge bin for dispensing a measured amount of a flame retardant material into said entrained air and shredded paper; and

(g) finishing mill means connected to the other end of said duct for exploding said shredded paper and dry chemical into fire retardant fiber insulation, having an outlet for passing said insulation and said air therefrom;

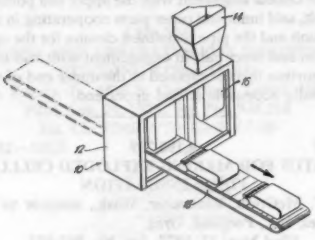
(h) wherein said air from said blower is continuously contained in said apparatus until it exits from said finishing mill.

4,198,800

AUTOMATIC WICKETTED BAG LOADER AND METHOD OF LOADING

Lowell A. Wilson, Burlington, Canada, assignor to Bonar & Bemis, Ltd., Burlington, Canada

Continuation of Ser. No. 756,203, Jan. 3, 1977, Pat. No. 4,124,966. This application Jun. 29, 1978, Ser. No. 920,197
Claims priority, application Canada, Dec. 9, 1976, 267496
The portion of the term of this patent subsequent to Jul. 14, 1995, has been disclaimed.
Int. Cl.[2] B65B *1/00*
U.S. Cl. 53—452 **7 Claims**



1. Apparatus for loading a bag with a commodity comprising:

(a) a framework;

(b) a carrier member retractably mounted in said framework; means coupled to said carrier member for extending and retracting said carrier member;

(c) means for arranging at least one empty bag in said framework, said bag having an open end adjacent said carrier member;

(d) means for initially opening said bag;

(e) means mounted on said carrier member engagable with said bag after said bag is initially opened for further opening said bag as said carrier member is retracted;

(f) means for gripping opposed top edge portions of said opened bag, said gripping means including, for each of said opposed edge portions of said opened bag, a rod rotatable into said bag opening and a clamping block to which said rod is pivotally mounted, each said rod, upon rotation into said bag clamping the adjacent bag edge portion against each respective said clamping block; and

(g) means for rotating each said rod away from each respective said clamping block when said bag has been filled to permit the filled bag to exit from said framework.

4,198,801

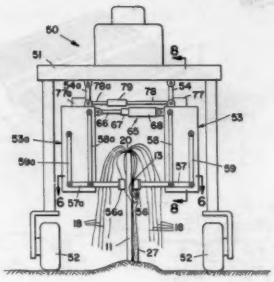
HARVESTING OF TRELLIS-SUPPORTED GRAPEVINES

Gerald L. Claxton, Fresno, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Feb. 17, 1978, Ser. No. 878,925
Int. Cl.[3] A01D *91/04*
U.S. Cl. 56—1 **10 Claims**

1. A method of harvesting grapes from grapevines wherein the trunks of said vines are planted in a row; wherein a horizontal trellis-supported fruiting wire extends along said row at a level above the upper ends of said trunks, wherein the fruit-bearing portions of said vines are secured to and extend along said fruiting wire, wherein the grapes grow from said fruit-bearing portions and are in a fruiting zone which is along and close to said fruiting wire, and wherein said vines include a plurality of non-fruiting laterals which extend generally upwardly and then outwardly and have down-hanging portions along said row to form a canopy over said fruiting zone, the method comprising:

(a) positioning a pair of shaker elements within said canopy and at a level above the upper ends of said trunks and on opposite sides of a fruit bearing portion of one of said vines,



(b) moving said shaker elements along the length of the row while maintaining said shaker elements within said canopy and at a level above the upper ends of said trunks and on opposite sides of the fruit bearing portions of said vines,

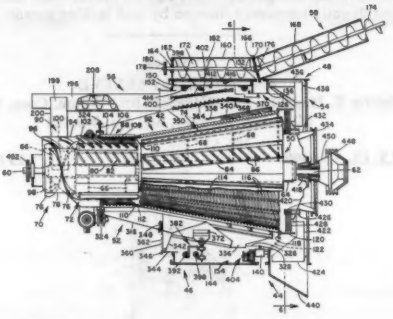
(c) moving said shaker elements back and forth transversely of said row to shake said fruit bearing portions of said vines as said shaker elements are moved along said row.

4,198,802

AXIAL FLOW ROTARY SEPARATOR FOR A COMBINE

Edward J. Hengen, Bettendorf, Iowa, and John E. Wilson, Colona, Ill., assignors to Deere & Company, Moline, Ill.

Filed Aug. 18, 1977, Ser. No. 825,537
Int. Cl.[2] A01D *45/02*
U.S. Cl. 56—14.6 **62 Claims**



1. An axial flow rotary combine comprising:

a mobile frame;

a rotary separator unit mounted on the frame and having a generally fore-and-aft rotor, a grate surrounding the rotor and having generally radial openings substantially around the periphery of the grate, a forward inlet and a rearward outlet between the grate and the rotor;

a forward mounted header, carried by the frame, for removing crop material from a field and delivering it through the inlet;

means carried by the frame for rotating the rotor so that it engages the crop material moving through the inlet and propels the crop material in a rearward spiral between the rotor and grate, whereby a portion of the crop material is separated and moves radially through the grate openings while the remainder is moved through the outlet;

an annular, rotary cleaner coaxially supported and surrounding the separator forwardly of the separator outlet for receiving crop material moving generally radially outwards through at least a portion of the grate openings and including radially extending openings for passing at least a portion of the crop material received from the separator and a rearward outlet;

means carried by the frame for rotating the cleaner;

a blower having an inlet communicating with the cleaner outlet and operative to move air through the crop material moving outwards from the grate to entrain a low density portion of said material and carry it through the cleaner outlet;

a grain receptacle mounted on the frame; and

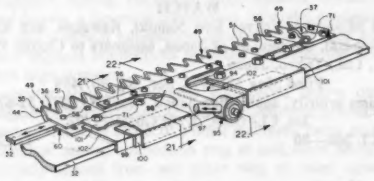
clean grain handling means carried by the frame for intercepting and collecting the material moving through the cleaner openings and delivering it to the grain receptacle.

4,198,803

CUTTERBAR FOR A CROP HARVESTING MACHINE

Graeme R. Quick, Lilydale, Australia, and William M. Mills, Brantford, Canada, assignors to White Motor Corporation of Canada Limited, Brantford, Canada

Filed Jun. 13, 1977, Ser. No. 805,738
Claims priority, application Canada, Aug. 13, 1976, 259086
Int. Cl.[2] A01D *55/02*
U.S. Cl. 56—296 **13 Claims**



1. In a crop harvesting machine having a cutterbar, including a bar back, guard means secured to said bar back having a plurality of juxtaposed multi-prong guard sections, and a knife assembly coacting with said guard means and having a knife back and a plurality of multi-point juxtaposed knife sections secured to said knife back, the improvement in the guard means and knife assembly wherein each guard section is secured to the bar back with bolts symmetrically located in alignment with junctions between adjacent prongs, each knife section having the points thereof spaced apart the same distance as the prongs of the guards on a narrow pitch such that movement of crop stems harvested is minimized, said knife sections being positioned and reciprocally mounted with respect to the guard sections such that the tips of the knife points extend ahead of the tips of the guard prongs in the direction of cutterbar movement and the roots of the knife sections extend behind the roots of the guard sections.

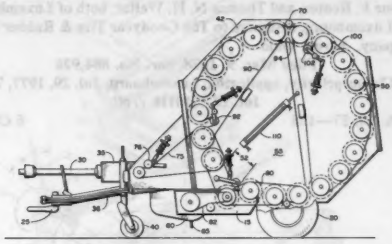
4,198,804

ROUND BALER MACHINE

Werner Konekamp, Herzebrock; Horst Harig, Harsewinkel, and Heinrich Isfort, Dulmen, all of Fed. Rep. of Germany, assignors to Gebr. Claas Maschinenfabrik GmbH, Postfach, Fed. Rep. of Germany

Filed Aug. 8, 1978, Ser. No. 932,004
Int. Cl.[2] A01D *39/00*
U.S. Cl. 56—341 **15 Claims**

1. In a round baler for windrowed fibrous agricultural materials comprising: a two-part frame having a generally cylindrical baling zone therein defined by side wall members of the frame and roller members extending between and distributed around the frame being journaled in the side wall members; pickup and conveying means mounted on the frame forward of the baling zone and communicating with the cylindrical baling zone, drive means connected to the pickup conveying means and the roller members for operating same to pick up fibrous materials from the ground and advance the materials in the baling zone wherein said roller members roll the material into a round bale, means pivotally connecting the parts of the frame to open the baling zone and deposit the round bale therefrom,



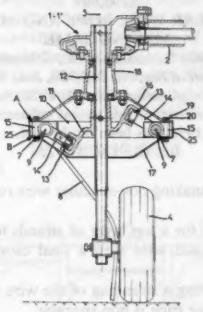
the improvement residing in the construction of the roller members which are formed of sheet metal rolled into a cylinder with stub shafts and a seal plate at each end of the cylinder, and shield members secured to the side walls of the frame and projecting into the ends of the roller members adjacent the seal plates to prevent the ingress of material between the roller members and the side walls.

4,198,805

HAYMAKING MACHINE

Frédéric Gerlinger, Ottersthal, France, assignor to Kuhn, S.A., Saverne, France

Filed Feb. 2, 1978, Ser. No. 874,643
Claims priority, application France, Feb. 18, 1977, 77 05330
Int. Cl.[2] A01D *79/00*
U.S. Cl. 56—370 **7 Claims**



1. In a haymaking machine intended especially for the windrowing of fodder, comprising at least one rotary rake head driven in rotation about a substantially vertical axis, a plurality of tool-carrier arms on said rake head, said arms extending outwardly from adjacent said axis, a control mechanism carried by the machine to oscillate said arms about their longitudinal axes, and working tools on the arms which, under the action of said control mechanism, pivot over a partial zone of their trajectory upward and in the direction opposite the direction of rotation of the rotary rake head; the improvement comprising two covers, one of which is disposed above said control mechanism, the rotary rake head having a drive hub, said one cover being fixed to said drive hub, the other of said covers being disposed below said control mechanism and secured to said machine, and support bearings in which said

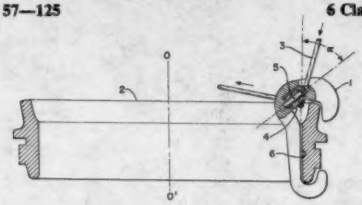
arms are mounted for ivoting, said support bearings being wedged between said two covers.

4,198,806

TRAVELLERS FOR TWISTING MACHINES

Rene F. Reuter, and Thomas N. H. Welter, both of Luxembourg, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 9, 1978, Ser. No. 884,926
Claims priority, application Luxembourg, Jul. 29, 1977, 77870
Int. Cl.[2] D01H *7/60*
U.S. Cl. 57—125 **6 Claims**



1. A roller traveller for a twisting frame useful for twisting threads, in particular heavy threads exceeding 10,000 denier, the improvement therein comprising a roller having a substantially cylindrical outer surface the length to diameter ratio of which surface exceeds one-half; said roller being rotatably mounted in said traveller to engage a thread being acted on by said traveller, the traveller having a hook portion, means providing an axis fixed in said hook portion mounting said roller for rotation about said axis, said axis lying at an angle between 30° and 60° with respect to a line perpendicular to the plane of travel of said traveller.

4,198,807

NON-SPECULAR WIRE ROPE AND METHOD OF MAKING SAME

Thomas Eistrat, 1020 S. Almansor St., Alhambra, Calif. 91801

Continuation-in-part of Ser. No. 869,850, Jan. 16, 1978, Pat. No. 4,149,367. This application Feb. 14, 1979, Ser. No. 12,168
The portion of the term of this patent subsequent to Apr. 17, 1996, has been disclaimed.
Int. Cl.[2] D07B *7/12*
U.S. Cl. 57—212 **10 Claims**

1. A method of making non-specular wire rope, which comprises:

(a) making wire for a top layer of strands non-specular before feeding said wire thru a final closing block on a strander, and

(b) then completing a stranding of the wire rope so that the completed wire rope is non-specular.

4,198,808

CALENDAR TIMEPIECE

Munetaka Tamaru, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 25, 1978, Ser. No. 909,475
Claims priority, application Japan, Jun. 3, 1977, 52/65411
Int. Cl.[2] G04B *19/24*
U.S. Cl. 368—37 **13 Claims**

1. A calendar timepiece comprising:

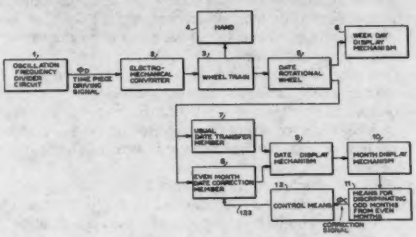
(a) a date display mechanism;

(b) first means for driving said date display mechanism;

(c) means for actuating said first means;

(d) means for discriminating odd months from even months,

(e) an electromagnetic driving means including a driving coil and a core, said electromagnetic driving means driven by an output signal from said discriminating means; and



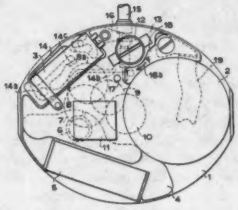
(f) second means for driving said date display mechanism and actuated by said electromagnetic means for correcting the last day of each month with 30 days or less.

4,198,809

CONSTRUCTION OF AN ANALOGUE CRYSTAL WRIST WATCH

Kenzi Miyasaka, Tokyo; Ryo Namiki, Kawagoe, and Kotaro Takahashi, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,488
Claims priority, application Japan, May 28, 1977, 52-62564
Int. Cl.[2] G04C *3/00*; G04B *27/02*
U.S. Cl. 368—80 **13 Claims**



1. The construction of an analogue crystal wrist watch comprising:

(a) a base plate,

(b) a power source battery cell provided on said base plate for providing energy to the watch circuit of said wrist watch,

(c) a crystal oscillating element adapted to receive energy from said power source battery cell and generate a signal of predetermined frequency,

(d) an electronic circuit including a frequency division circuit for dividing the frequency of the output signal of said crystal oscillating element,

(e) a step motor comprising a drive coil connected to said electronic circuit,

(f) a hand indication means driven by said step motor,

(g) an external operation member constituting a hand correction means for correcting said hand indication means,

(h) a reset lever cooperating with said external operation member to reset said electronic circuit,

(i) said crystal oscillating element disposed over said reset lever, and

(j) said base plate having an oval shape as seen in plan.

4,198,810

ANALOG-DIGITAL CHRONOMETRIC DISPLAY

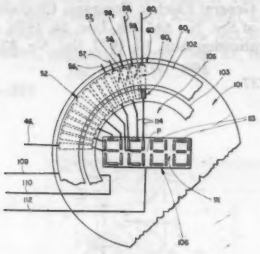
Kurt Fahrenschon, Kelkheim, Fed. Rep. of Germany, assignor to Braun AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 30, 1978, Ser. No. 921,007

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2730069

Int. Cl.² G04B *19/30*

U.S. Cl. 368—239 **5 Claims**



1. A chronometric indicator comprising:

a multidigit display having a plurality of digits each subdivided into a plurality of individually energizable digit segments having respective digit-segment connections and having a common connection, whereby energization of said common connection simultaneously with any of said segment connections optically activates the respective digit segment;

an annular array of generally equispaced analog display segments having respective analog-segment connections and each having respective inner and outer parts, an inner common analog connection ring at said inner parts, and radially spaced from said inner ring an outer common analog connection ring at said outer parts, whereby energization of said inner ring simultaneously with any of said analog-segment connections optically activates the respective inner part and energization of said outer ring simultaneously with any of said analog-segment connections optically activates the respective outer part, each of said digit-segment connections being connected to a respective analog-segment connection; and

sequencing means connected to all of said connections and to both of said rings and operable in a first phase to energize said inner ring simultaneously with a selected one of said analog-segment connections, in a second phase to energize said outer ring simultaneously with a selected one of said analog-segment connections, and in a third phase to energize said common connection of said digital display with selected ones of said analog-segment connections for displaying the time.

4,198,811

WATERTIGHT WATCHCASE HAVING A REMOVABLE POLYGONAL HARD GLASS

Michel P. Ratajski, Bienne, Switzerland, assignor to Montres Rado S.A., Switzerland

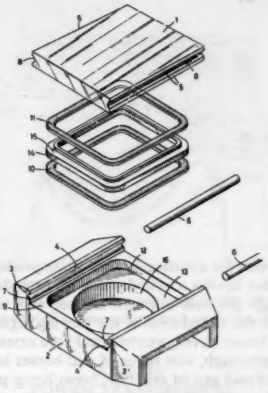
Filed May 30, 1979, Ser. No. 43,683

Claims priority, application Switzerland, Jun. 2, 1978, 6093/78

Int. Cl.² G04B *37/08*

U.S. Cl. 368—292 **6 Claims**

1. In a watertight watchcase having a removable polygonal hard glass, in combination: a middle case section having a peripheral upper flat face covered by the glass and portions at its periphery projecting upwards beyond said flat face and adjoining the glass side faces on two diametrically opposed glass sides, each one of said glass side faces having at its lower edge an outwardly projecting rim, said outer portions of the middle case section having at their upper edge an inwardly projecting rim; a watertight gasket located under the glass, and keying members clamped between the inwardly projecting rims of said outer portions of the middle case section and said



outwardly projecting rims of the glass under the action of said gasket being frictionally engaged and compressed by the glass, thereby firmly securing said glass and said keying members to the middle case section.

4,198,812

POWER SUPPLY CHAIN

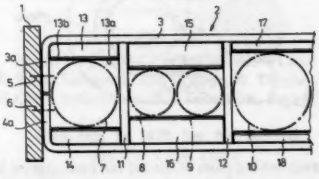
Kurt Hennig, Munich; Manfred Klein, Ismaning, and Albert Stohr, Markt Schwaben, all of Fed. Rep. of Germany, assignors to Gebr. Hennig GmbH, Ismaning, Fed. Rep. of Germany

Filed Oct. 26, 1978, Ser. No. 955,135

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 7733812[U]; Nov. 3, 1977, 2749248; May 30, 1978, 7816146[U]

Int. Cl.² F16G *13/16*

U.S. Cl. 59—78.1 **11 Claims**



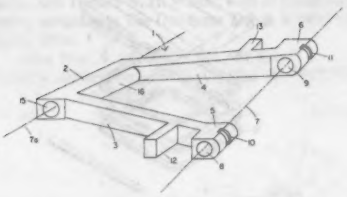
1. In a power supply chain having two lateral chain strands and connecting webs arranged in between, each of which comprises two cross arms and separators adjustable in their distance from one another arranged perpendicularly of the cross arms and which accommodate a plurality of power supply lines in the openings formed by the cross arms and the separators, the improvement wherein the power supply lines are supported in said openings by removable bearing elements of which that surface which faces the power supply line runs parallel to the cross arms.

4,198,813

LINK FOR CONTINUOUS CHAINS

Raymond I. Hall, Jr., 303 Ellen Ave., Savoy, Ill. 61874

Filed Aug. 7, 1978, Ser. No. 931,491
Int. Cl.[2] F16G *13/18*
U.S. Cl. 59—80 **11 Claims**



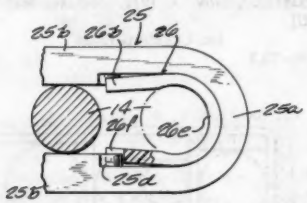
1. A link unit for continuous chains comprising a U-shaped frame member having a cylindrical bore extending longitudinally through the base segment thereof and having a boss positioned at the end of each of the two leg segments thereof, each of said bosses having a cylindrical bore extending longitudinally therethrough, said bores of said bosses having a common axis and said axis of said boss bores being parallel to the axis of said base segment bore, said bosses being in such space relationship to each other to be adapted to receive therebetween, in slideable interfitting engagement, the base segment of the U-shaped frame member of a second of said link units, when said two link units are arranged in series in a chain, each of said bosses having a slot therein extending from the outside surface thereof into the bore thereof, whereby a plug weld can be formed in said boss slot thereby welding said boss to a cylindrical pintle fitted through said bores of said bosses, and each of said leg segments having an outwardly extending arm segment positioned thereon forwardly of and adjacent to said boss.

4,198,814

CHAIN HAVING DISASSEMBLY DETENT

Ralph R. Schoenick, Mequon, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Aug. 31, 1978, Ser. No. 938,616
Int. Cl.[2] F16G *13/06*
U.S. Cl. 59—84 **2 Claims**



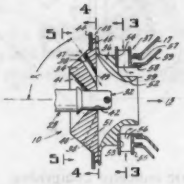
1. In a chain having pairs of spaced pin links, center links and a T-headed pin at each chain joint and connecting the corresponding ends of each pair of pin links and the intermediate end of the adjacent center link, said ends having pin assembly slots in partial registry so as to define the bore for the pin, the center link being turnable on the pin for chain articulation and laterally pivotable on the pin for chain side-flexing, the outside of each pin link being indented to receive and retain the T-head, each center link being narrowed between its ends to allow a chain assembly and disassembly procedure which includes and requires laterally shifting of the pin in the center link assembly slot, said chain being of the improved type wherein the center link includes a U-shaped bushing which defines the pin bore and the assembly slot in part and which is turnable with the pin in side-flexing of the chain; the further improvement wherein the bushing is of an elastic material and the assembly slot between the ends thereof is narrower than the diameter of the pin such that shifting of the pin requires spreading the ends of the bushing with a deliberate effort and the inadvertent or unintentional release of the pin is prevented.

4,198,815

CENTRAL INJECTION FUEL CARBURETOR

Melvin Bobo, and Richard E. Stenger, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 644,038, Dec. 24, 1975, abandoned. This application Aug. 10, 1977, Ser. No. 823,307
Int. Cl.[2] F02C *7/22*
U.S. Cl. 60—737 **18 Claims**



1. An improved gas turbine engine fuel injection system of the type having a fuel tube leading to an injector, wherein the improvement comprises:

(a) a plurality of fuel injection ports formed in said injector for conducting fuel flow to the outer cylindrical periphery thereof; and

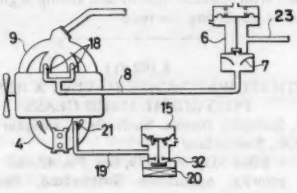
(b) air blast means for impinging in a substantially radial direction on the outer periphery of said injector at said plurality of fuel injection ports, said air blast means comprising a disc with upstream and downstream sides and having formed therethrough a plurality of substantially radially aligned orifices providing fluid communication between said upstream and downstream sides.

4,198,816

APPARATUS FOR PREVENTING AFTER-FIRE OF AN INTERNAL COMBUSTION ENGINE

Yutaka Hasegawa, and Koichi Hirakata, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 17, 1977, Ser. No. 778,553
Claims priority, application Japan, Dec. 15, 1976, 51-149868
Int. Cl.[2] F01N *3/10*
U.S. Cl. 60—305 **1 Claim**



1. Apparatus for preventing after-fire in a multi-cylinder internal combustion engine, which is equipped with means for treating the exhaust gas by introducing secondary air into the exhaust lines, comprising the combination of means to introduce secondary air by means of an air injection system into the exhaust passage of only some of the total number of cylinders of said engine, and means to introduce atmospheric air for a predetermined period of time by means of a mixture control

system into the intake lines of some but not all of the cylinders which have been supplied with secondary air, the atmospheric air being introduced in response to an abrupt change of the negative pressure in the intake lines towards the lower load side.

4,198,817

EXHAUST GAS DIFFUSER

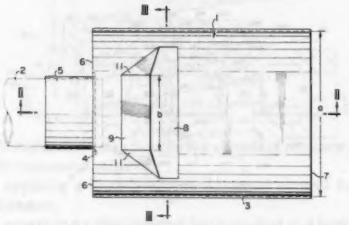
Tomio Fujita, and Hideyuki Ueda, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Mar. 1, 1978, Ser. No. 882,387

Claims priority, application Japan, Dec. 13, 1977, 52-149623

Int. Cl.[2] F01N *5/04*

U.S. Cl. 60—319 **3 Claims**



1. An exhaust gas diffuser for connection to the discharge end of an exhaust pipe of an internal combustion engine, comprising:

a tubular body which has a relatively flattened cross-sectional shape and defines a passage therein, and

a connecting pipe mounted to a first axial end of said tubular body at a central portion of the relatively flattened cross section of said tubular body so as to define a central exhaust gas inlet port by said connecting pipe and a pair of first external air inlet ports which open at opposite sides of said exhaust gas inlet port,

said tubular body defining an exhaust port as its second axial end and having a pair of second external air inlet ports provided at its axially middle and relatively flattened wall portions and transversely elongated relative to the axis of the tubular body, and a pair of guide vanes which define the upstream edges of said pair of second external air inlet ports and which are inclined inwardly toward said exhaust port thereby defining a throttling nozzle at an axially middle portion of said passage, the ratio of the width of said guide vanes to the width of said relatively flattened tubular body being 0.7 or larger and the ratio of the clearance defined between the inner edges of said pair of guide vanes to the inside diameter of said connecting pipe being between 0.4 and 0.6.

4,198,818

PRIMARY PUMP DRIVE FOR AUTOMATIC MOTOR VEHICLE TRANSMISSIONS

Jürgen Pickard, Wernau, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

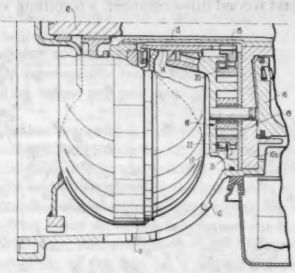
Filed May 2, 1978, Ser. No. 902,053

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720879

Int. Cl.[2] F16D *33/00*

U.S. Cl. 60—330 **8 Claims**

1. A primary pump drive for automatic transmissions, the primary pump drive comprising primary pump means operable to be driven directly from an input means, the primary pump means being arranged with the axis of rotation thereof extending substantially parallel to an input axis of the input means, characterized in that the primary pump means is constructed as an internally toothed pump and includes an internally toothed pump wheel provided at an outer circumference thereof with



external teeth, and in that the external teeth are adapted to engage with teeth of a gear connected with the input means.

4,198,819

POWER TRANSMISSION

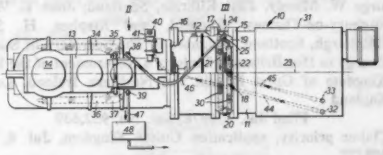
Nigel G. Bourne, Droitwich, England, assignor to Dowty Meco Limited, Worcester, England

Filed Jun. 13, 1978, Ser. No. 915,294

Claims priority, application United Kingdom, Jun. 14, 1977, 24683/77; Feb. 18, 1978, 6533/78

Int. Cl.[2] F16D *33/00*

U.S. Cl. 60—337 **13 Claims**



1. A power transmission including a motor, a "fixed-fill" fluid coupling and a gear box, at least the fluid coupling of which is liquid-cooled, tubing being provided which is formed as a framework and which is so associated with the fluid coupling that cooling liquid caused to pass through the interior of the tubing is brought into heat-exchange relation with respect to said fluid coupling.

4,198,820

PUMPING UNIT FOR A WELL PUMP

Albert B. Roth, Lafayette, and Wallace L. Thacher, Oakland, both of Calif., assignors to N L Industries, Inc., Hightstown, N.J.

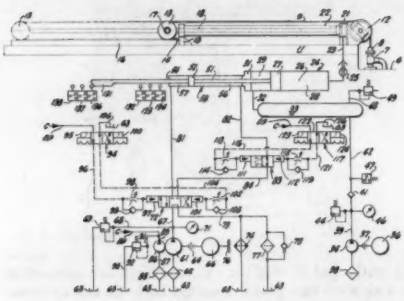
Filed Aug. 21, 1978, Ser. No. 935,552

Int. Cl.[2] F15B *15/18*

U.S. Cl. 60—369 **6 Claims**

1. A pumping unit for a well pump comprising a main cylinder, a main piston reciprocable in said cylinder, means for connecting said piston to said well pump, a flow cylinder having a predetermined diameter, a flow piston reciprocable in said flow cylinder and dividing said flow cylinder into a first flow chamber and a second flow chamber, means for connecting said first flow chamber to said main cylinder, means for supplying air under pressure to said second flow chamber, a drive cylinder, a drive piston reciprocable in said drive cylinder and dividing said drive cylinder into a first drive chamber and a second drive chamber, means for interconnecting said flow piston and said drive piston, a source of liquid under relatively high pressure, a sink for liquid under relatively low pressure, a reversing valve movable between two positions,

means including ducts effective in one of said positions for connecting said source to said first drive chamber and said sink to said second drive chamber and in the other of said positions for connecting said sink to said first drive chamber and said source to said second drive chamber, a throttling valve in one



of said ducts and movable between a first position restricting flow in said one duct and a second position unrestricting flow in said one duct, and means responsive to the position of said drive piston for moving said reversing valve between said two positions and for moving said throttling valve between said first position and said second position.

4,198,821

DEVICES FOR EXTRACTING ENERGY FROM WAVE POWER

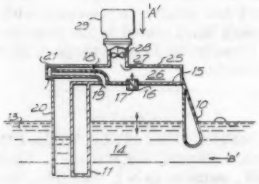
George W. Moody, East Kilbride, Scotland; John L. Wilson, Sunbury-on-Thames, England, and Stephen H. Salter, Edinburgh, Scotland, assignors to The Secretary of State for Energy in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 7, 1978, Ser. No. 922,639

Claims priority, application United Kingdom, Jul. 8, 1977, 28849/77

Int. Cl.[2] **E02B** *9/08;* **F03B** *13/12*

U.S. Cl. 60—398 **6 Claims**



1. A device for extracting energy from waves on a liquid in which the device is adapted to float, the device having, a chamber with an opening for the flow of the liquid into and out of the chamber to provide a quantity of the liquid which is arranged to oscillate in the chamber from the motion of the waves, and means arranged to extract some of the energy of the oscillating liquid in the chamber, wherein the improvement comprises:

(a) an asymmetric shape of that portion of the device adapted to be submerged and lie in a vertical plane aligned in the direction of propagation of the incoming waves, and

(b) mooring means for holding the device below the natural level of floatation of the device in the liquid so as to inhibit movement of the device in response to said waves, so that in operation waves generated by the device itself are substantially unidirectional and in a direction towards said incoming waves.

4,198,822

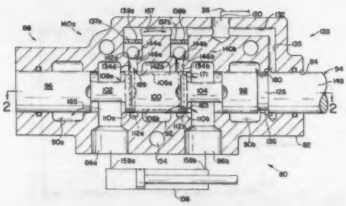
LOAD RESPONSIVE HYDRAULIC SYSTEM

Wendell E. Miller, Warsaw, Ind., assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Jul. 18, 1977, Ser. No. 816,863

Int. Cl.[2] **F15B** *13/04, 13/06*

U.S. Cl. 60—445 **54 Claims**



1. A load responsive hydraulic system (FIG. 3 or FIG. 12,+FIG. 1 or FIG. 15) which comprises a source (20 of FIG. 3, or 46 of FIG. 12) of pressurized fluid having a pump (22 or 48) and a sump (24*a* or 24*b*);

effective output means (26 or 60), being connected to said source and having an effective output operator (28 or 56), for controlling the effective output of said pump in response to fluid pressure applied to said effective output operator;

a fluid actuated device (156 of FIG. 1) having first (158*a*) and second (158*b*) actuating ports;

a directional control valve (80 of FIG. 1, or 280 of FIG. 15) having a pressure inlet channel (92 or 296) that is connected to said pump, having return port means (88 or 288) for return of excess fluid to said source, having a first work port channel (86*a* or 294*a*) that is connected to said first actuating port and a second work port channel (86*b* or 294*b*) that is connected to said second actuating port, and having movable valving element means (94 or 284) that is movable from a stand-by position (FIG. 1 or FIG. 15) to an operating position (FIG. 8 or FIG. 16), for establishing both a first fluid flow path (162 of FIG. 9, or 344 of FIG. 16) from said pressure inlet channel to said first work port channel and a second fluid flow path (164 of FIG. 9, or 348 of FIG. 16) from said second work port channel to said return port means as said valving element means is moved to said operating position, and for occluding both said first and second fluid flow paths when said valving element means is moved to said stand-by position;

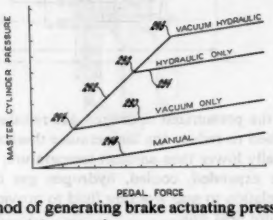
valved signal means (128 or 238), including a control port (130 or 130*g*), for establishing a restricted flow path (166 of FIG. 8, or 301 of FIG. 16) from said pump to said first work port channel after said second fluid flow path is established, for providing a fluid restriction (106*a* or 138*b* of FIG. 8, or 258*a* of FIG. 16) in said restricted flow path, for sensing fluid pressure in said third fluid flow path intermediate of said fluid restriction and said first work port channel, for applying said sensed fluid pressure to said control port, and for occluding said restricted flow path before said occlusion of said second fluid flow path; and

means (36, 230*a*, etc.) for applying said sensed fluid pressure to said effective output operator.

4,198,823
METHOD OF GENERATING BRAKE ACTUATING PRESSURE

Thomas P. Mathues, Miamisburg, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 805,114, Jun. 9, 1977, which is a continuation of Ser. No. 587,148, Jun. 16, 1975, abandoned, which is a continuation of Ser. No. 441,239, Feb. 11, 1974, abandoned. This application Jul. 31, 1978, Ser. No. 929,690
Int. Cl.[2] B60T *13/12, 13/56*
U.S. Cl. 60—547 R 3 Claims



1. A method of generating brake actuating pressure comprising the sequential steps of:

(a) applying a linearly directed manual control force to a member;

(b) generating a first boosted force applied to a brake actuating pressure generator in linear series with said manual control force, in accordance with the amount of manual control force applied to the member, to a first boosted force limit established by the amount of power available for such generation;

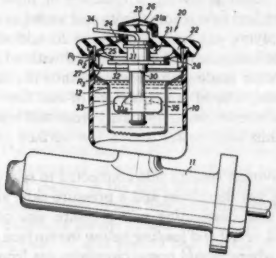
(c) then generating a second boosted force applied to the brake actuating pressure generator in linear series with said manual control force and said first boosted force, in accordance with the amount of additional manual control force applied to the member, to a second boosted force limit established by the amount of power available for such generation;

(d) and generating brake actuating pressure by the sum of said forces.

4,198,824
SEALED FLUID RESERVOIR FOR BRAKE MASTER CYLINDERS

Tomoyuki Nogami, and Takashi Fujii, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aishin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Filed Feb. 24, 1978, Ser. No. 881,139
Claims priority, application Japan, Mar. 8, 1977, 52-28469[U]
Int. Cl.[2] F15B *7/00*
U.S. Cl. 60—535 6 Claims



1. A fluid reservoir for mounting on a brake master cylinder, said reservoir comprising:

a casing for storing brake fluid, said casing having an inner wall and an upper opening;

a removable seal cap detachably coupled over the upper opening of said casing to air-tightly seal the interior of said casing, said seal cap defining an interior air space with the upper surface of brake fluid in said casing, said cap having a vent hole in the upper end thereof and a central annular boss forming an inner bore opening to the vent hole;

an annular substantially horizontally disposed valve plate secured to, below and concentrically disposed relative to the boss;

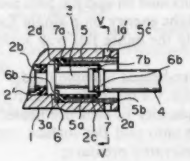
said cap further comprising a downwardly extending annular protrusion integral therewith, said protrusion comprising a first downwardly and inwardly extending annular lip the lower end of which abuts the upper side of said valve plate to define the interior air space below the first lip and an upper air space above the first lip and the upper side of said valve plate, said protrusion further comprising, radially outwardly of the first lip, a second downwardly extending lip the lower end of which abuts the inner wall of the casing, a portion of said annular protrusion above the lower end of said second lip being spaced from the inner wall of the casing to define an annular air space between the inner wall and said spaced portion; and

means defined in said seal cap for continuously fluidly communicating the inner bore with the upper air space and the annular air space.

4,198,825
MASTER CYLINDER

Takeshi Sakazume, Yokohama, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Continuation of Ser. No. 743,215, Nov. 18, 1976, abandoned. This application May 3, 1978, Ser. No. 904,918
Int. Cl.[2] B60T *7/02*
U.S. Cl. 60—594 9 Claims



1. A master cylinder for use in a vehicle braking system, said master cylinder comprising:

a main body formed of a single integral rigid member and having therein a bore with an open end;

a piston slidably positioned within said bore, said piston being permanently maintained in sliding contact with the inner surface of said bore;

an elongated hollow cylindrical sleeve extending into said bore through said open end thereof, said sleeve having an outer peripheral surface contacting the inner surface of said bore, said sleeve having a first axial end adjacent said piston and a second axial end adjacent said open end of said main body;

one of said main body and said sleeve having formed therein at least one recess extending radially with respect to the axis of said bore, the other of said main body and said sleeve having at least one integral projection projecting radially with respect to said axis of said bore, said at least one projection snappingly fitting into said at least one recess, thereby retaining said sleeve in said bore;

means, positioned adjacent said first end of said sleeve within said bore, for abutting against said piston to maintain said piston within said bore; and

said sleeve having a cylindrical wall having therein at least one slot extending from said second end axially toward

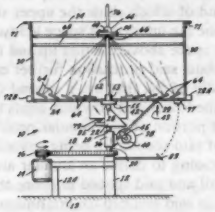
said first end of said sleeve, said slot extending entirely through at least one portion of said cylindrical wall of said sleeve, said axially extending slot being adapted for the receipt of a brake actuating lever.

4,198,826

SOLAR POWERED ENGINE AND TRACKING SYSTEM

Edsel Chromie, 6720 Belle Glade, San Diego, Calif. 92119

Division of Ser. No. 735,593, Oct. 26, 1976, Pat. No. 4,144,716.
This application Jul. 5, 1977, Ser. No. 812,832
Int. Cl.[2] F03G *7/02*
U.S. Cl. 60—641 **4 Claims**



1. A solar light energy powered engine comprising:
a cylinder having a piston slidably engaged therein, said piston forming a pressure seal with the inner walls of said cylinder interconnected to a drive shaft for providing rotational forces thereto;
a flash boiler is provided at one end of said cylinder, said cylinder having at least one flat surface;
a solar light energy concentrator comprising a plurality of substantially equal sized recti-linear reflective surfaces supported on a substantially flat pivotal base member, each of said plurality of recti-linear reflective surfaces fixedly positioned on said flat base member for concentrating solar light energy on a single focal point comprising substantially the entire flat wall surface area of said flash boiler;
a source of pre-heated boilable fluid;
a pump and injector means for selectively admitting a predetermined quantity of said pre-heated boilable fluid from said source onto said flat surface opposite said focal surface at an elevated pressure;
valve means for selectively venting said cylinder of said boilable fluid; and
positioning means for pivoting said flat base member about either one of two perpendicular axes, said positioning means being controlled by the relative movement of the Earth and Sun for maintaining the concentration of the solar light energy from said concentrator on said single focal point.

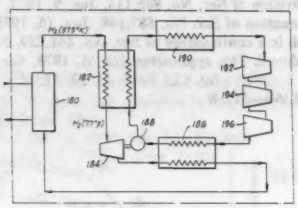
4,198,827

POWER CYCLES BASED UPON CYCLICAL HYDRIDING AND DEHYDRIDING OF A MATERIAL

Lynn E. Terry, 22 Suncrest Ave., Bridgeton, N.J. 08302, and Roger J. Schoeppel, P.O. Box 971, Stillwater, Okla. 74074

Division of Ser. No. 666,786, Mar. 15, 1976, Pat. No. 4,090,361.
This application Apr. 27, 1978, Ser. No. 900,769
The portion of the term of this patent subsequent to Mar. 16, 1993, has been disclaimed.
Int. Cl.[2] F01K *23/02, 25/10*
U.S. Cl. 60—649 **6 Claims**

1. A method for providing a low temperature heat sink in a power cycle utilizing a working fluid comprising:
combining hydrogen gas with a hydride-forming material under conditions of temperature and pressure such that a hydride saturated with, and in equilibrium with, hydrogen gas is formed;
heating the hydride at constant volume to a temperature above the equilibrium temperature of the hydride to activate the hydride and chemically compress the hydrogen gas in the hydride;
transferring additional heat to the hydride and concurrently releasing the hydrogen gas under pressure therefrom;



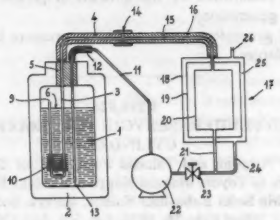
expanding the pressurized hydrogen gas released from the hydride bed to reduce the temperature thereof to a level substantially lower than ambient temperature; and
passing the expanded, cooled, hydrogen gas in heat exchange relation to said working fluid to provide said low temperature heat sink.

4,198,828

CRYOSTAT AND COOLANT-SUPPLY SYSTEM THEREFORE

Jacques Mercier, Dardilly, and André Ponthus, Villeurbanne, both of France, assignors to Societe d'Etudes d'Automatisation, de Regulation et d'Appareils de Mesures S.A., Lyons, France

Filed May 18, 1978, Ser. No. 907,420
Claims priority, application France, Jun. 9, 1977, 77 18419
Int. Cl.[2] F17C *7/02*
U.S. Cl. 62—55 **8 Claims**



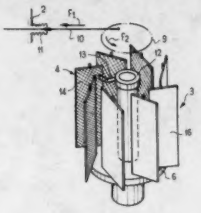
1. A cooling system comprises:
a cryostat;
a supply vessel receiving a quantity of liquefied gas, an insulated first tube leading from said vessel to said cryostat for supplying gas from said vessel to said cryostat, said first tube being formed in said vessel with a U including a first stretch leading downwardly into the liquid within said vessel, a bend at the bottom of said first stretch, and a second stretch rising upwardly from said bend and opening within said vessel above the surface of the liquid therein;
a pump having a suction side connected to said cryostat and drawing gas therefrom and a pressure side; and
a second tube connecting said pressure side of said pump with said vessel and leading below the surface of the liquid therein whereby said pump circulates gas from said vessel to said cryostat and returns gas from said cryostat to said vessel, said first tube being insulated between said vessel and said cryostat.

4,198,829

CRYOPUMPS

Jacques Carle, Saint Martin D'Heres, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jun. 28, 1978, Ser. No. 919,944
Claims priority, application France, Jul. 5, 1977, 77 20554
Int. Cl.[2] B01D *5/00*
U.S. Cl. 62—55.5 **7 Claims**



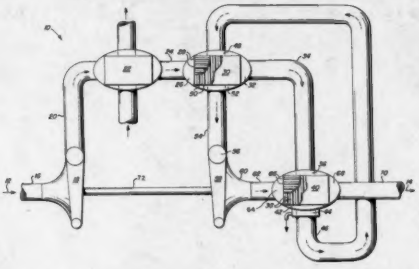
1. A cryopump comprising a thermally insulated enclosure, means defining a confined area within said enclosure, means defining cold walls for trapping by adsorption in said enclosure but outside said confined area, means defining adsorbent layers within said confind area, and means to open and close said confined area whereby when said confined area is closed, said cold walls trap by condensation, and when said closed area is thereafter opened, said adsorbent layers trap by adsorption.

4,198,830

FLUID CONDITIONING APPARATUS AND SYSTEM

Carl D. Campbell, Cerritos, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 3, 1978, Ser. No. 921,660
Int. Cl.[2] F25B *9/00*; F28B *9/00*; F25D *9/00*
U.S. Cl. 62—87 **18 Claims**



1. A system for conditioning a working fluid in a fluid flow path, the working fluid comprising a mixture of first and second gaseous fluids, said system comprising:

(a) first and second heat exchange means each defining first and second fluid passageways providing heat exchange relationship between the fluids in said passageways, each of said passageways having fluid inlet and outlet means;

(b) first duct means in the fluid flow path and coupling a source of the working fluid to said fluid inlet means of said first fluid passageway of said heat exchange means;

(c) second duct means in the fluid flow path and coupling said fluid outlet means of said first fluid passageway of said first heat exchange means to said inlet means of said first fluid passageway of said second heat exchange means;

(d) third duct means in the fluid flow path and coupling said fluid outlet means of said first passageway of said second heat exchange means to said fluid inlet means of said second fluid passageway of said first heat exchange means;

(e) fourth duct means in the fluid flow path and coupling said fluid outlet means of said second fluid passageway of said first heat exchange means to said fluid inlet means of said second fluid passageway of said second heat exchange means;

(f) fifth duct means in the fluid flow path and coupling said fluid outlet means of said second fluid passageway of said second heat exchange means to a point of use for the conditioned fluid; and

(g) liquid extraction means disposed in said third duct means to extract from the working fluid the condensate of said one of said first and second gaseous fluids.

16. The method of conditioning a moisture entraining gaseous fluid from a source of pressurized fluid with first and second heat exchangers, each having first and second passageways providing heat exchange between the fluids therein, said method comprising the steps of:

(a) conducting the fluid from the source through said first passageway of said first heat exchanger;

(b) conducting the fluid from said first passageway of said first heat exchanger through said first passageway of said second heat exchanger;

(c) conducting the fluid from said first passageway of said second heat exchanger through said second passageway of said first heat exchanger;

(d) conducting the fluid through fluid cooling means;

(e) conducting the cooled fluid flow from said cooling means through said second passageway of said second heat exchanger to cause a cooling of the fluid in said first passageway thereof and effect therein a condensation of moisture entrained in the gaseous fluid;

(f) separating the condensation product from the gaseous fluid and conducting it away; and

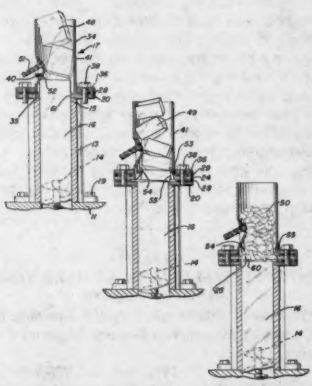
(g) conducting the remaining gaseous component of the gaseous fluid to a point of use of the conditioned fluid.

4,198,831

ICE MAKER

Walter C. Barnard, White Bear Lake, and Norbert E. Venne, St. Paul, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 9, 1978, Ser. No. 868,401
Int. Cl.[2] F25C *1/14*
U.S. Cl. 62—320 **17 Claims**



1. In an ice maker having means for forming ice, means defining a constricting nozzle, and means for urging the ice through the nozzle to form a solid column of hard ice, the improvement comprising:

a breaker tube defining a delivery passage disposed to receive the ice column for longitudinal movement therethrough along a preselected path, said delivery passage having a cross section larger than that of the ice column

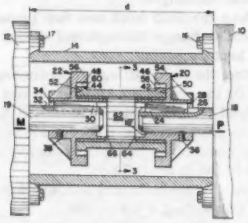
permitting the ice column moving from the nozzle to be spaced inwardly of a first sidewall portion of the tube; and a second, inwardly projecting sidewall portion of the breaker tube disposed generally oppositely of said first sidewall portion and projecting into said path of movement of the ice column to define deflecting means arranged to cause a sufficient deflection of the hard ice in said column to shear the column at spaced intervals thereby forming the hard ice into a series of discrete ice bodies, said second sidewall portion of the breaker tube comprising an indented portion of the tube.

4,198,832

FLEXIBLE DRIVE COUPLING

Ernest H. Pauli, Watchung, N.J., assignor to The Hilliard Corporation, Elmira, N.Y.

Filed May 9, 1978, Ser. No. 904,281
Int. Cl.[2] F16D *3/18, 3/54*
U.S. Cl. 64—9 R **5 Claims**



1. A flexible drive coupling adapted to form a driving connection between substantially axially aligned confronting shafts, respectively, protruding from housings of a driver and a driven mechanism interconnected by a shroud detachably connecting said housings in fixed spacial relation and forming a protective enclosure surrounding said protruding shafts, said driving connection comprising a pair of gear members mounted respectively on said protruding shafts, a spacer member carrying longitudinally spaced gear portions, each of which is longitudinally receivable in meshing engagement with one of said respective gear members, and axially projecting aligning means extending between at least one end of said spacer member and its corresponding adjacent gear member and forming a sliding engagement therebetween slideably engageable in a predetermined relative angular position corresponding to meshing alignment of one of said spacer gear portions and its corresponding gear member when said corresponding gear member and spacer gear portion are in disengaged longitudinally spaced position, such that upon registering of said aligning means in a predetermined longitudinal relationship said gear portion and gear member will be maintained in alignment and merged into meshing engagement upon further axial movement toward one another.

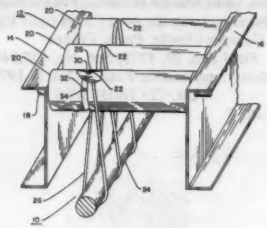
4,198,833

CONTROLLED SLIPPAGE, LIMITED TORQUE TRANSMISSION

Fred J. Fleischauer, Pittsburgh, Pa., and Theodore L. McCart, Bolton, Canada, assignors to General Logistics Corporation, Pittsburgh, Pa.

Filed Jun. 28, 1976, Ser. No. 700,299
Int. Cl.[2] F16D *7/02;* **F16H** *55/48;* **B65G** *13/02*
U.S. Cl. 64—30 R **12 Claims**

1. A controlled slippage limited-torque transmission comprising a driving member, a driven member spaced therefrom, a transmission belt wrapped about said members to transmit torque from said driving member to said driven member, and an elastic annular split slippage member having rigidity and a gap at the split slippingly mounted on one of said driving and said driven members and disposed between said one member and a belt wrap thereabout, said slippage member substantially encircling said one member, whereby said slippage member is



capable of ready assembly and disassembly relative to said one member.

4,198,834

ELASTIC STOCKING WITH CIRCUMFERENTIALLY ADJUSTABLE UPPER THIGH

Lawrence G. Reid, Sr., Winston-Salem, N.C., assignor to Carolon Company, Winston-Salem, N.C.

Filed May 15, 1978, Ser. No. 906,023
Int. Cl.[2] D04B *9/52, 9/54*
U.S. Cl. 66—172 E **6 Claims**

1. In a full-length anti-embolism elastic stocking including a foot portion, a leg portion and an upper thigh engaging portion with an open upper end, said upper thigh engaging portion being knit with stretchable yarn to provide stretch thereto, the combination therewith of improved means for adjusting the circumferential dimension of said thigh engaging portion, said adjusting means comprising a generally wedge-shaped insert of stretchable fabric sewn into a slit extending downwardly in said thigh engaging portion with the wider portion of said insert being positioned adjacent the upper end of the stocking and with seamless knit fabric extending from one side of said wedge-shaped insert to the other side thereof, said insert being divided longitudinally along the medial portion thereof to define first and second insert panels including adjacent free side edges, fastening means attached along the inner surface of said free side edge of said first insert panel for holding said free side edge in circumferentially adjusted overlapping relation-

ship with said second insert panel so that said free side edge of said second insert panel is positioned beneath said first insert panel to provide a relatively smooth outer surface in the area of the adjusted wedge-shaped insert, and spaced lines of indicia extending longitudinally of said second insert panel and parallel to said free side edge of said second insert, said lines of indicia indicating the amount of overlap of said first insert panel over said second insert panel when said upper thigh engaging portion of said stocking is applied in adjusted position around the thigh of the wearer so that the full stretchable character of said upper thigh engaging portion of said stocking is retained.

4,198,835

DEVICE RELATING TO HEATER UNITS FOR THE HEAT-TREATMENT OF TEXTILE YARNS

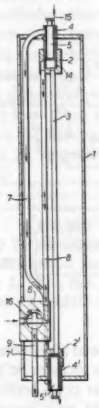
Walter Lüthi, Ebnat-Kappel, Switzerland, assignor to Heberlein Maschinenfabrik AG, Wattwil, Switzerland

Filed Jan. 23, 1979, Ser. No. 5,852

Claims priority, application Switzerland, Jan. 26, 1978, 844781/78

Int. Cl.² D06B *23/18*

U.S. Cl. 68—5 E **5 Claims**



1. Apparatus for heat-treating textile yarn, comprising a heater tube through which the yarn can be passed lengthwise with a fluid heating medium, a seal at each end of the heater tube including a removable sealing member having a groove on its outer surface for guiding the yarn, a suction outlet connected to the groove in each sealing member, a filter located at the yarn entry end of the heater tube, and heating medium supply means for supplying the fluid heating medium to the heater tube via the filter.

4,198,836

APPARATUS FOR DYEING TEXTILES

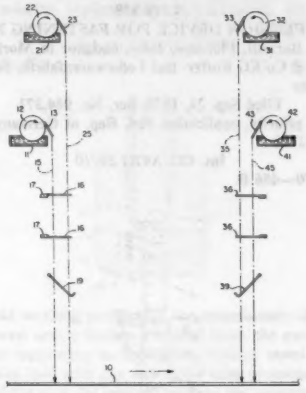
Sam M. Goodson, Walker County, Ga., assignor to West Point Pepperell, Inc., West Point, Ga.

Filed Feb. 27, 1979, Ser. No. 15,670

Int. Cl.² D06B *1/02, 11/00*

U.S. Cl. 68—205 R **4 Claims**

1. In an apparatus for the continuous dyeing of a moving textile breadth comprising a plurality of troughs for holding dye, a roller in each trough which roller rotates to form a dye film thereon, a doctor blade adjacent each roller for removing the dye film, means for directing said dye film on each doctor blade into streams of dye, and a plurality of means for breaking up said streams of dye into droplets the improvement wherein said troughs are arranged in pairs, each pair of troughs being spaced from each other pair of troughs in a direction parallel to the movement of the textile breadth and each pair of troughs having disposed beneath it one of said plurality of means for breaking up into droplets the streams of dye coming from each trough, the troughs of each pair being spaced apart vertically



from one another and spaced apart horizontally from one another by a distance less than the width of the means beneath each pair of troughs for breaking up the streams of dye into droplets.

4,198,837

PERMUTATION LOCK

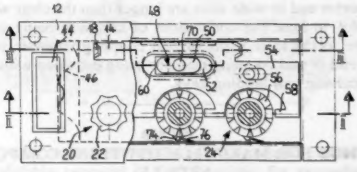
Urs Gisiger, Selzach, Switzerland, assignor to Amiet AG, Oberdorf, Switzerland

Filed May 26, 1978, Ser. No. 910,014

Claims priority, application Switzerland, May 27, 1977, 6582/77

Int. Cl.² E05B *37/12, 65/52*

U.S. Cl. 70—71 **9 Claims**



1. In a permutation lock including a closing part provided with catches and a separate locking part provided with at least two interlocking devices each having a setting disc, a holding disc defining an intake notch, and an arresting mechanism for disconnectably coupling the setting disc to the holding disc, a combination of said locking part comprising: a locking slider normally biased for movement in a locking direction; a control slider normally biased for movement in said locking direction and being manually controllable for movement in an opposite direction toward said holding discs; at least one locking member arranged on said locking slider to engage said catches; a coupling member arranged between said locking slider and said control slider, said coupling member being shiftable transversely to the direction of movement of said sliders from a normal coupling position in which it transfers the movement of said control slider to said locking slider, to a decoupling position in which it decouples said control slider from said locking slider to allow said control slider to engage the intake notches in said holding discs when the latter are aligned in an opening

position; and a safety mechanism including a plurality of safety notches provided on the periphery of said setting discs, and holding tongues provided on said locking slider to engage said safety notches during the open position of said locking slider.

4,198,838

SUSPENSION DEVICE FOR FASTENING KEYS

Massimo Borselli, Florence, Italy, assignor to Moritz Madler GmbH & Co KG Koffer- und Lederwarenfabrik, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,371

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742720

Int. Cl.[2] A47G *29/10*

U.S. Cl. 70—456 B **6 Claims**

1. A suspension device for fastening keys onto a carrier member, which comprises: a holding member connectable to a carrier member and including two oppositely located legs with two substantially parallel walls defining with each other a longitudinally extending slot, said two legs being interconnected at one end thereof while defining a receiving section wider than said longitudinally extending slot; a coupling member detachably connectable to said holding member and having one end provided with a web of a substantially rectangular cross section the diagonal of which is shorter than the diameter of said receiving section whereas the narrow sides of said web are shorter and its wide sides are longer than the clear width of said slot, at least the wider sides of said web being inclined relative to the main plane of said coupling member, and the other end of said coupling member being provided with means for receiving and holding keys.

4,198,839

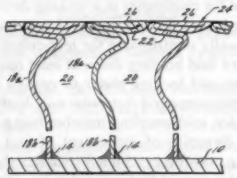
METHOD FOR MAKING LIGHTWEIGHT COMPOSITE ARTICLE

Peter J. Linko, III, Cincinnati; William R. Butts, Milford; Susan L. Awalt, Cincinnati, and Charles E. Glynn, Hamilton, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 19, 1978, Ser. No. 897,619

Int. Cl.[2] B21B *1/00*

U.S. Cl. 72—199 **4 Claims**



1. In a method for making a smooth, substantially continuous smeared cap portion on a lightweight porous member, the steps of:

providing a predetermined excess of material of the member at a member surface in an amount sufficient to provide the cap portion; and then,

rubbing a hard, smooth, substantially nongrinding tool having a surface finish of up to about 63 AA microinch across the member surface at a rate of 2500 to about 6000 surface feet per minute relative to the member surface, while pressing the tool generally toward the member surface to generate sufficient heat to smear and deform material of the surface and to provide the surface with a smooth, substantially continuous, smeared cap portion having a surface finish of about 25–300 AA microinch.

4,198,840

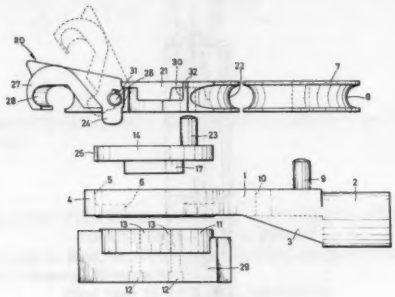
TOOL FOR BENDING METAL PIPES

Knud H. Nielsen, Violinvej 12, 3650 Oelstykke, and Poul E. K. Carlsen, Lundebjerggaardsvej 304, 2740 Skolvunda, both of Denmark

Filed Jul. 14, 1978, Ser. No. 924,774

Int. Cl.[2] B21D *7/024*

U.S. Cl. 72—217 **9 Claims**



1. A tool for bending metal pipes comprising a base member, a first mandrel on said base member defining an annular peripheral recess of semi-circular cross section, a rotatable circular bearing disc mounted said base member adjacent said first mandrel, a second mandrel, rotatably mounted eccentrically on said bearing disc and defining an annular peripheral recess of said first mandrel to receive a pipe, means for releasable locking said second mandrel in a coaxial relationship with said bearing disc and retaining means on said locking means for retaining a pipe in said tool.

4,198,841

ROLL MILL STAND

Vladimir N. Vydrin, ulitsa Timiryazeva, 28, kv. 27; Leonid A. Barkov, ulitsa Klary Tsetkin, 30-a, kv. 13; Valery V. Pastukhov, ulitsa Stalevarov, 28-a, kv. 79; Vladimir A. Matveev, ulitsa Rossiiskaya, 32, kv. 1, all of Chelyabinsk; Pulat S. Maxudov, ulitsa Metallurgov, 9, kv. 4; Nikolai N. Sergeev, ulitsa Metallurgov, 5, kv. 4, both of Chirchik; Vladimir S. Mebel, ulitsa Chaplygina, 5, kv. 2, Tula; Erik V. Pravednikov, ulitsa Metallurgov, 71, kv. 79, Tula; Efim M. Rabinovich, ulitsa Metallurgov, 37, kv. 35, Tula, and Valery K. Ushakov, ulitsa Chaplygina, 6, kv. 27, Tula, all of U.S.S.R.

Filed Jul. 24, 1978, Ser. No. 927,613

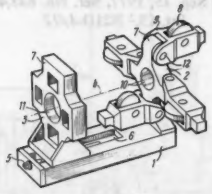
Claims priority, application U.S.S.R., Jul. 26, 1977, 2519907[I]

Int. Cl.[2] B21B *31/10, 31/20, 31/18*

U.S. Cl. 72—224 **5 Claims**

1. A roll mill stand comprising: a supporting frame; two spaced-apart housings mounted on said supporting frame in

such manner that at least one of said housings is movable towards the other; means for moving said housings towards and away from each other; at least three work rolls arranged between said two housings, the geometric centre lines of the work rolls being located in a single plane and set at an angle one with respect to another so that said work rolls form a pass; at least three shells each accommodating a work roll of said at least three work rolls; each of said at least three shells being coupled to one of said two housings by a pivot secured in said housing parallel to the axis of the accomodated work roll; each



of said at least three shells being coupled to the other of said two housings by movement of the housings; a screw-down mechanism associated with the other of said two housings for adjusting a radial gap formed between at least two of the work rolls; at least one of said three shells being mounted on a respective pivot which connects said shell to one of said two housings for movement along said pivot in order to adjust the distance between said at least three work rolls transversely of an axis of rolling; means for moving at least one of the three said shells relatively to its respective pivot; and means for rotating said work rolls.

4,198,842

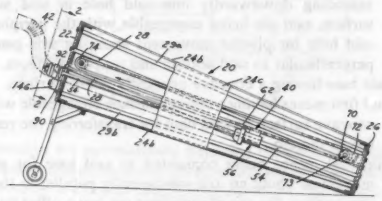
HAND OPERATED TUBE CRIMPING APPARATUS

Ronald J. Pawlaczyk, 36511 Milo, New Baltimore, Mich. 48047

Filed May 2, 1978, Ser. No. 902,170

Int. Cl.[2] B21D *9/14*

U.S. Cl. 72—307 **10 Claims**



1. A portable, hand operable tube crimping device comprising;

a front plate;

a back plate;

an attachment means for connecting said front and back plate;

a female die positioned on said front plate;

a manually operated toggle mechanism means for movement of a male die which cooperatively engages the female die when in the engaged position so to indent a tube inserted therebetween; said toggle mechanism means positioned on said front plate; and

a manually operated drive means independently operated from said toggle means; said drive means (a) providing transverse motion to the tube in the direction of the front plate (b) comprising a manually operable ratchet and pawl means and (c) being capable of developing sufficient power to drive the indented tube across a portion of the female die and thereby flatten the indentation.

4,198,843

PROCESS FOR PRODUCING TUBULAR ARTICLES

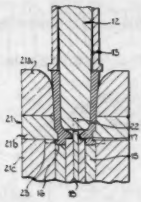
Geoffrey M. Spence, Jugglers, Folly Lane, Crowborough, Sussex, England

Filed Jul. 6, 1978, Ser. No. 922,328

Claims priority, application United Kingdom, Jul. 7, 1977, 28495/77

Int. Cl.[2] B21D *22/00*

U.S. Cl. 72—356 **11 Claims**



1. A cold working process for the manufacture of a hollow tubular metal article having a shaped head, the process comprising: (a) supporting an open-ended hollow metal tube on a first forming tool with one end of the tube projecting beyond the end of the tool, (b) initially necking the projecting end of the tube in a necking die, and thereafter, with the necked tube held in the die by the first forming tool, (c) compressing the necked portion of the tube between the first forming tool and a second forming tool to form the shaped head.

4,198,844

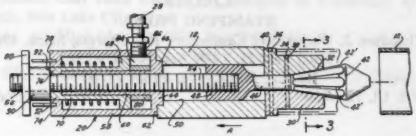
TUBE EXPANDER

Jerome R. Lowe, Seymour, and Frank P. Russo, Waterbury, both of Conn., assignors to J & S Hydraulics Inc., Milford, Conn.

Filed Jan. 5, 1979, Ser. No. 1,200

Int. Cl.[2] B21D *41/02*

U.S. Cl. 72—393 **19 Claims**



1. A tube expander comprising a segmented expander, an arbor slidably received in said expander for expanding the expander upon movement of the arbor in a first predetermined direction, first means for moving said arbor in said first direction to expand the expander a first predetermined amount and second means, independent of said first means, for moving said arbor in said first direction a second predetermined amount to flare a tube end inserted on said segmented expander.

4,198,845

TRANSFER DEVICE

Hugh M. Sofy, 1230 E. Big Beaver, Troy, Mich. 48084

Filed Nov. 6, 1978, Ser. No. 957,934

Int. Cl.[2] B21D *43/05*

U.S. Cl. 72—421 **8 Claims**

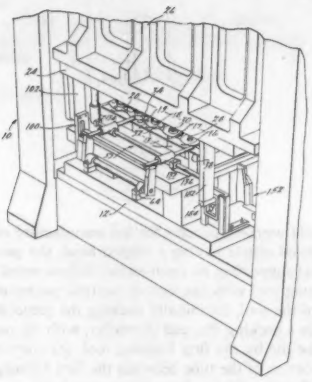
1. A work transfer device for moving workpieces progressively from station to station in a press of the type having a reciprocal part and a series of in-line stations in which operations are performed on said workpieces, said transfer device comprising

opposed work holding jaw means; and

first and second actuator means operatively connected to and actuated by said reciprocable part, said first actuator

means adapted to reciprocally actuate said jaw means transversely of said work stations into and out of engagement with workpieces therein, said second actuator means including

a rock shaft drivingly connected to said jaw means and operable to reciprocally actuate the same while engaged with said workpieces to move the latter to the next adjacent stations in said press,



cam and cam follower means drivingly connected to said rock shaft, and

brake means coactive with said rock shaft yieldably resisting movement thereof and operative to hold said cam and cam follower means in pressed engagement with each other during operation of said press, whereby to inhibit destructive vibration of said transfer device in use under at least certain operating conditions of said press.

4,198,846

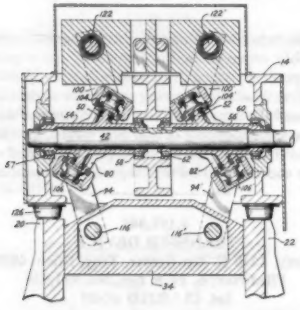
STAMPING PRESS

Theodore J. Wrona, 812 Canterbury Rd., Sturgis, Mich. 49091

Filed Feb. 21, 1978, Ser. No. 879,138

Int. Cl.[2] B21J *9/18*; F16H *23/00*

U.S. Cl. 72—450 **18 Claims**



1. A stamping press comprising a frame, a ram supported by said frame for reciprocable movement, a main shaft for driving said ram, a yoke disposed around said shaft, pivot means being connected to said yoke and having an axis which intersects said main shaft, means connecting said yoke to said ram, a circular wobble plate mounted on said shaft at an angle less than ninety degrees with respect to the axis of said shaft and rotating with said shaft and within said yoke for rocking said yoke and thereby reciprocating said ram to perform repetitive stamping operations.

4,198,847

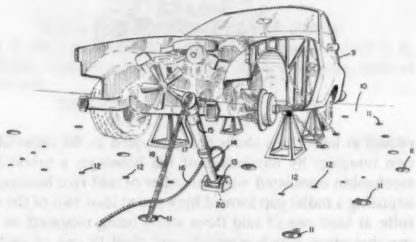
BASE FOR A HYDRAULICALLY OPERATED TOOL

H. Vernon Russell, Perkasie, and Jeffrey V. Russell, Quakertown, both of Pa., assignors to Applied Power Inc., Brookfield, Wis.

Filed Sep. 15, 1977, Ser. No. 833,499

Int. Cl.[2] B21D *1/12*

U.S. Cl. 72—462 **5 Claims**



1. In a tool assembly adapted to be used on a generally planar support surface having at least one hole, said assembly including a hydraulically actuated device having a plunger which moves outwardly from a cylinder when hydraulic force is applied, the improvement comprising:

a base having a generally planar bottom surface adapted to slidably engage the support surface and including front and rear end portions,

first means for pivotally connecting said base to said hydraulic cylinder,

and a single pivot pin extending generally perpendicularly from the bottom surface of said base and adapted for extending downwardly into said hole in said support surface, said pin being engageable with the periphery of said hole for pivotal movement about an axis generally perpendicular to said bottom and support surfaces,

said base having a concave upwardly facing surface,

said first means having a convex surface engageable with the concave surface on said base for transferring the reaction forces thereto,

said first means being connected to said base for pivotal movement about an axis substantially parallel to the bottom surface, the axis of said pivot pin being offset laterally from the pivot axis of said first means.

the engagement between said bottom and support surfaces applying forces generated by said hydraulic cylinder from said bottom surface to said support surface and around the periphery of said hole.

4,198,848

LEVEL GAUGE CALIBRATION APPARATUS

Daniel R. Mealey, 10601 Coloma Rd., Rancho Cordova, Calif. 95670

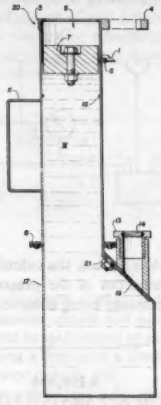
Filed Mar. 22, 1978, Ser. No. 888,940

Int. Cl.[2] G01F *25/00*

U.S. Cl. 73—1 H **6 Claims**

1. A process simulator comprising a bubble pipe, a tank connected to said bubble pipe so as to define a U-shaped configuration, an air valve connected to said bubble pipe remote from said tank, indicia described on said bubble pipe, an index

pointer disposed upon said tank adapted to coalesce with said indicia on said bubble pipe, a water level hole adjacent to said



indicator, and means to adjust the liquid level within the tank to provide a comparative reading.

4,198,849

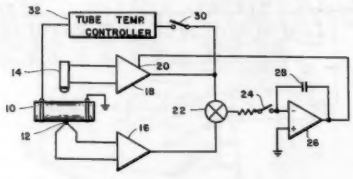
PYROMETRIC TEMPERATURE MEASUREMENTS IN FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

Hans Siess, Zwischen den Wegen, Owingen; Elmar Wiedeking, Am Häsle Rain 3, Sipplingen, and Werner Sigle, Emerichstr. 34, Heinrich, Uberlingen, all of Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,731

Int. Cl.[2] G01K *15/00*

U.S. Cl. 73—1 F **12 Claims**



2. Circuitry for automatically adjusting the calibration of a pyrometric radiation detector for extended temperature range measurements of a heated object independently of the radiation emission factor variations of said object, said radiation detector being positioned to receive radiation from said object and producing a detector output signal indicative of the temperature thereof, said circuitry comprising:

second temperature measuring means positioned to measure the temperature of the object, said second means producing a temperature measurement within a limited temperature range independently of the emission factor of said object and generating a calibration output signal indicative of said temperature measurement;

a detector signal amplifier including a variable gain element coupled to the output of said radiation detector for amplifying the detector output signal therefrom;

differential circuitry coupled to the outputs of said second temperature measuring means and said detector signal amplifier for producing a difference signal proportional to the difference between said calibration output signal and said detector output signal; and

an integrating amplifier coupled to said differential circuitry and responsive to said difference signal for adjusting said variable gain element of said detector signal amplifier to a level where said difference signal becomes zero.

4,198,850

GAS SENSORS

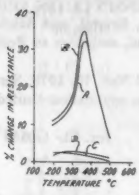
Jack G. Firth, St. Albans; Alan Jones; Thomas A. Jones, both of Sheffield, and Brenda Mann, Barnsley, all of England, assignors to National Research Development Corporation, London, England

Filed May 31, 1978, Ser. No. 911,219

Claims priority, application United Kingdom, Nov. 30, 1977, 49879/77

Int. Cl.[2] G01N *31/00*

U.S. Cl. 73—23 **5 Claims**



1. A method of testing an oxygen-containing atmosphere for the presence of carbon monoxide, the method comprising:

exposing to said atmosphere a monocrystalline body of zinc oxide having a pair of electrodes separately in contact therewith, while maintaining said body at a substantially constant temperature in the range 300°–420° C.; and

monitoring the electrical resistance of said body between said electrodes while said body is so exposed and maintained.

4,198,851

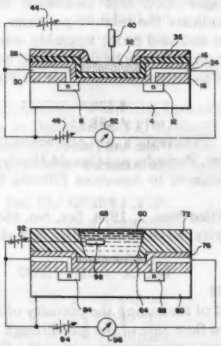
METHOD AND STRUCTURE FOR DETECTING THE CONCENTRATION OF OXYGEN IN A SUBSTANCE

Jiri Janata, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed May 22, 1978, Ser. No. 908,524

Int. Cl.[2] G01N *31/06*

U.S. Cl. 73—23 **3 Claims**



1. A solid state sensor for detecting the concentration of oxygen in a substance to which the sensor is exposed, said sensor comprising

a semi-conductor substrate having a first doping polarity,

a pair of spaced-apart diffusion regions located at the surface of said substrate material and having a second doping polarity opposite that of the substrate material,

an electrical insulator material overlying at least a portion of

said diffusion regions and the surface of the substrate material lying between the diffusion regions,

a membrane overlying at least a portion of said insulator material, said membrane comprising a metallo porphyrin included in a polymeric matrix whose work function changes with a change in the concentration of molecular oxygen bound to the membrane, and

a reference electrode connected in circuit with said diffusion regions through a potential source,

the conductivity between said diffusion regions thereby being a measure of the work function change of said membrane which, in turn, is a measure of the concentration of oxygen to which the membrane is exposed.

4,198,852

INSPECTION APPARATUS

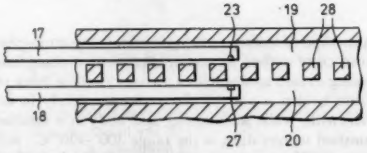
John M. Osman, Bristol, and Michael P. Martin, Berkshire, both of England, assignors to Rolls-Royce Limited, London, England

Filed Nov. 13, 1978, Ser. No. 959,476

Claims priority, application United Kingdom, Nov. 29, 1977, 49534/77

Int. Cl.² G01M *3/02*

U.S. Cl. 73—37 **6 Claims**



1. Apparatus suitable for inspecting the positional accuracy of a hole or passage in a workpiece support means and a probe assembly comprising a thermistor bead responsive to the impingement of a jet of air thereon and means adapted to direct a jet of air on to said thermistor head, said air jet directing means and said thermistor bead being aligned and spaced apart, and said workpiece support means and said probe assembly being mounted for relative movement so that said air jet directing means and said thermistor bead are positionable at each end of the hole or passage to be inspected whereupon an air jet from said air jet directing means passing through said hole or passage impinges upon said thermistor bead, means being provided to indicate the relative positions of said workpiece support means and said probe assembly whereby the position of said hole or passage may be determined when the thermistor bead indicates the impingement of an air jet thereon.

4,198,853

POROSITY MEASUREMENT

John F. Graham, Perivale, and Donald Hardy, Wembley, both of England, assignors to American Filtrona Corporation, Richmond, Va.

Filed Nov. 2, 1978, Ser. No. 956,843

Claims priority, application United Kingdom, Nov. 4, 1977, 46099/77

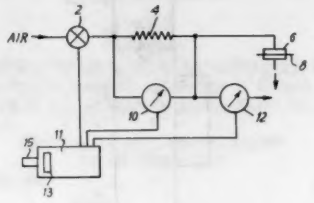
Int. Cl.² G01N *15/00*

U.S. Cl. 73—38 **17 Claims**

1. A method of measuring the porosity of a sheet material to a gas at a given flow rate of the gas through the sheet material which comprises automatically setting the flow rate of the gas through the sheet material at a number of values close to said given value, measuring the value of the pressure drop through the sheet material at each of said close flow rate values, calculating from said close and measured values the values of constants A and N for said sheet material in the equation:

$$\text{flow rate} = A \times (\text{pressure drop})^N;$$

from these calculated values of A and N for the sheet material calculating the pressure drop through the material at said given flow rate, and calculating the porosity with the given flow rate and the calculated pressure drop, the automatic setting of the



flow rate at said close values, the calculation of A and N, and the calculation therefrom of the pressure drop at the given flow rate and the porosity being achieved by means of a microprocessor.

4,198,854

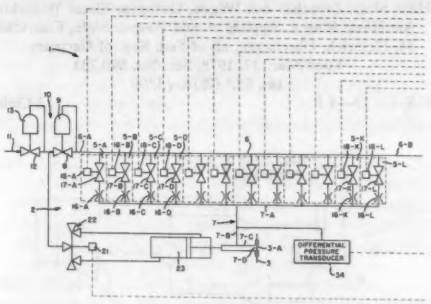
METHOD AND APPARATUS FOR MEASURING POROSITY

James M. Washington; Gerald H. Crowther, and Robert T. Gaudlitz, all of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,250

Int. Cl.² G01M *3/02*

U.S. Cl. 73—38 **44 Claims**



1. Apparatus for measuring the porosity of a material comprising:

means for measuring the pressure difference across a predetermined area of said material;

means for generating and conveying to said area a plurality of medium flows having different predetermined volumteric flow rates;

and control means responsive to said pressure measuring means for controlling said generating and conveying means and for determining said porosity employing said flow rates.

4,198,855

LINE BREAK DETECTOR

Takashi Tsujikura, Yokohama, Japan, assignor to The Japan Steel Works Ltd., Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,359

Int. Cl.² G01M *3/26*

U.S. Cl. 73—40.5 R **1 Claim**

1. A line break detector comprising:

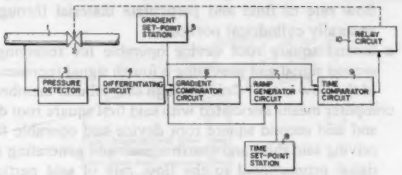
a pressure detector for detecting an internal pressure of a pipeline;

a differentiating circuit for providing an output which is

related to an amount of a changing rate of signals from said pressure detector;

a gradient set-point station for predetermining a desired value relating to said output of said differentiating circuit;

a gradient comparator circuit for comparing said output of said differentiating circuit with said desired value of said gradient set-point station;



a ramp generator circuit which is triggered by an output of said gradient comparator circuit and produces an output whose slope is related to said output of said differentiating circuit, and for setting a degree of a gradient of an output of said ramp generator circuit; and

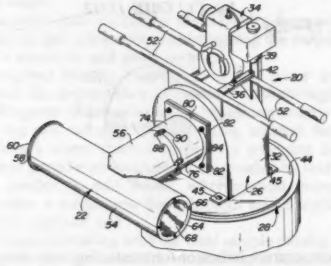
a time comparator for generating a line break signal at the time an output of said ramp generator circuit becomes equal to said desired value of said gradient set-point station within the period of time which is preset.

4,198,856

SMOKE BOMB ISOLATION AND CONTAINMENT DEVICE

Valdur Kaselaan, 103 Redford Rd., Oreland, Pa. 19075, and Joseph H. Appleton, Coachman East Apts., No. 4001, Lindenwold, N.J. 08021

Filed Aug. 11, 1978, Ser. No. 932,831
Int. Cl.² G01M *3/20*
U.S. Cl. 73—40.7 **5 Claims**



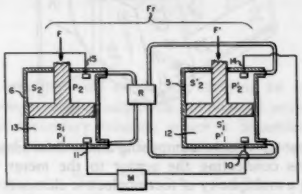
1. Portable apparatus for forcing smoke produced by an ignitable smoke bomb into a cavity to determine the presence of leaks therein, said cavity having an opening, said apparatus comprising a smoke source housing and a blower assembly, said outlet and blower means therein, said housing being arranged to be mounted with its outlet in communication with the opening in said cavity, and having means to seal the opening of said cavity to the ambient atmosphere, said smoke source housing being adapted to support a smoke bomb therein and including an inlet port, an outlet port and air pervious, spark barrier means interposed therebetween, said barrier means comprising a wire-mesh screen, said smoke source housing being releasably mounted on said blower housing with the outlet of the smoke source housing in communication with the inlet of the blower housing, said smoke source housing including an air pervious cradle for supporting said smoke bomb in a position to enable air to readily flow around the bomb and an opening having a removable closure to enable the bomb to be placed on said cradle, said blower means being operative to draw air from the ambient atmosphere through the inlet port into the smoke source housing, through the cradle around and past the smoke bomb, through the wire-mesh barrier means and then through the blower means into said cavity so that the smoke produced by the bomb is forced into the cavity while any sparks produced by the smoke bomb are arrested in the barrier means and isolated from said cavity by said barrier means and said blower means.

4,198,857

MEASURING SYSTEM

Roger Preux, 70, rue Philippe Dartis, 93031 Epinay S/Seine, France

Filed May 8, 1978, Ser. No. 903,751
Claims priority, application France, May 13, 1977, 77 14778
Int. Cl.² G01L *1/02*
U.S. Cl. 73—141 R **8 Claims**



1. A system for measuring the force exerted on a set of separately operable hydraulic jacks each carrying the same load for actuating the jib of a crane, wherein each said hydraulic jack has a main chamber fluidly isolated from the main chamber of the other said hydraulic jacks and being free of fluid connecting circuits therebetween comprising:

pressure sensors, one associated with each of said main chambers for sensing the pressure of the fluid therein, and each said pressure sensor producing a signal output characteristic of the pressure of the fluid in its said associated main chamber; and,

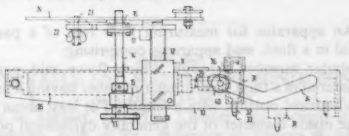
a calculation member coupled to each of said pressure sensors responsive to the signal output thereof to summate the forces derived from the pressure applied to each of the main piston areas in each of said main chambers and to calculate the total force from the individual forces exerted on each jack individually of said set of jacks.

4,198,858

METHOD AND APPARATUS FOR SPOT MARKING TIRES

Derek Farmer, and Christopher Woodfield, both of Birmingham, England, assignors to Dunlop Limited, England

Filed Dec. 20, 1978, Ser. No. 971,255
Claims priority, application United Kingdom, Jan. 4, 1978, 132/78
Int. Cl.² G01M *17/02*
U.S. Cl. 73—146 **5 Claims**



3. Apparatus for spot-marking a pneumatic tire, comprising means for rotating the tire, marking means, support means for supporting the marking means and maintaining it in the same attitude relative to the tire, means for moving the marking means along the support means in a direction similar to the sense of rotation of the tire, and guide means on the support

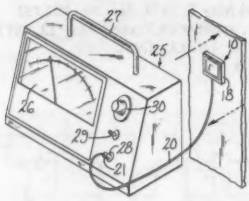
means for guiding the marking means, when moving along the support means, to move in a generally V-shaped path toward and away from the rotating tire.

4,198,859

HEAT FLOW PROBE

Ludwig K. Holtermann, 43 Ragged Rock Rd., Old Saybrook, Conn. 06475

Filed Nov. 9, 1978, Ser. No. 959,341
Int. Cl.[2] G01K *17/00*
U.S. Cl. 73—190 H **6 Claims**



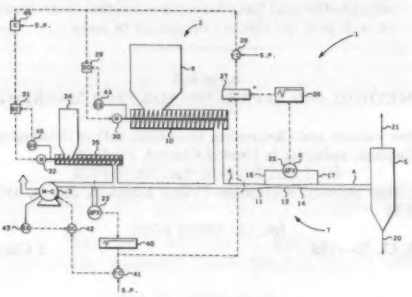
1. A heat flow probe comprising a heat flow sensor, a meter, and means connecting the sensor to the meter, the sensor including a multiplicity of thermoelectric elements mounted in a frame, connected in series to generate an additive emf signal and arranged to present a hot face and a cold face, the meter being an analog meter having a range on the order of 0 to 5 mV and having its scale calibrated in BTU/ft.^{2}-hr., and the connecting means including a circuit having a first switch for reversing the polarity of the signal.

4,198,860

METHOD AND APPARATUS FOR MEASURING PARTICULATE MATTER FLOW RATE

William R. King, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 27, 1978, Ser. No. 881,479
Int. Cl.[2] G01F *1/74*
U.S. Cl. 73—195 **32 Claims**



1. An apparatus for measuring flow rate of a particulate material in a fluid, said apparatus comprising:

a tubular member through which flows said particulate material in a fluid, said tubular member having a generally cylindrical portion with a length of at least about 3 times the inside diameter of the generally cylindrical portion;

differential pressure sensing means associated with said generally cylindrical portion and operable for producing a first signal representative of the pressure drop associated with the flow of fluid and particulate material through the generally cylindrical portion;

flow rate measuring means associated with said tubular member operable for providing a second signal representative of a pressure drop associated with the flow of fluid through said tubular member;

first control means associated with said tubular member upstream of said generally cylindrical portion operable for controlling the rate at which said particulate material enters said tubular member;

a first square root device operable for receiving said first signal and providing a third signal representative of the flow rate of fluid and particulate material through the generally cylindrical portion;

a second square root device operable for receiving said second signal and providing a fourth signal representative of the flow rate of fluid through said tubular member; and

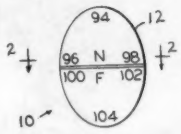
computer means associated with said first square root device and said second square root device and operable for receiving said third and fourth signals and generating a fifth signal proportional to the flow rate of said particulate material through said generally cylindrical portion, said computer means also operably associated with said first control means for controlling the rate at which said particulate material flows through said tubular member in response to said fifth signal.

4,198,861

TEMPERATURE INDICATORS

Catherine Mung-Kuen Luk, Kowloon, Hong Kong, assignor to Carice International Products, Ltd., Kowloon, Hong Kong

Filed Sep. 8, 1978, Ser. No. 940,746
Claims priority, application United Kingdom, Sep. 12, 1977, 37991/77
Int. Cl.[2] G01K *11/12*
U.S. Cl. 73—356 **7 Claims**



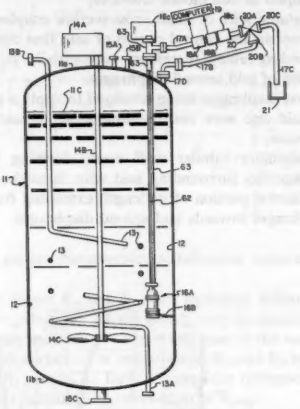
1. A temperature indicator for measuring body temperature, said temperature indicator comprising a transparent generally planar outer member having a relatively small area for retention against a limited, small, outer surface of a body, the member comprising a plurality of discrete temperature-sensitive means attached to the back of said outer member, each of which discrete temperature-sensitive means including a liquid crystal material which is activatable within an individually and separately predetermined temperature range to emit or reflect visible radiation through said outer means, which radiation indicates visibly that the temperature range detected by an activation of said material, said predetermined ranges overlapping so that emission from any one material indicates one temperature range and simultaneous emission from two materials indicates a temperature range which is between the ranges of temperatures at which the two materials emit, optical filter means interposed between said transparent outer member and said liquid crystal material for reducing response of the liquid crystals in the blue color range, whereby the liquid crystal display is substantially inactivated after its temperature passes beyond its activation range.

4,198,862

APPARATUS FOR CIRCULATING A PORTION OF THE LIQUID CONTENTS OF A TANK FOR ANALYSIS AND OBTAINING REPRESENTATIVE SAMPLES

Isadore E. Rubin, South Orange, N.J., assignor to Pilot Unit Products, Inc., South Orange, N.J.

Filed Jan. 26, 1979, Ser. No. 6,639
Int. Cl.[2] G01N *1/14*
U.S. Cl. 73—421 B 16 Claims



1. A system for monitoring a chemical composition being processed in a vessel, comprising:

pump means positioned in the vessel and being submerged below the surface of the chemical composition being processed;

pump drive means being positioned above and external to said vessel;

an elongated shaft extending downwardly from said drive means to said pump means and coupling the output of said drive means to said pump means;

an elongated housing connected to said pump means to permit the upward flow of a sample therethrough;

said elongated housing having a branching conduit for receiving said sample, said branching conduit further including a return conduit portion for returning the liquid sample introduced into said return conduit by said branching conduit to said vessel, whereby said pump means provides a continuous flow through said branching and return conduits; and

means communicating with the fluid sample passing through said branching conduit for monitoring at least one predetermined characteristic of said sample.

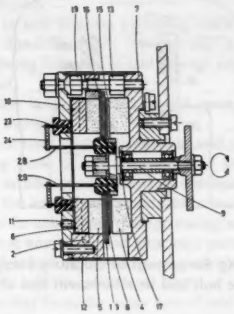
4,198,863

ELECTROMAGNETIC TORSIONAL STIFFNESS ELEMENT

Gerhard Bartek, Mitterfeldstrasse 14, D-8000 Munchen 21, and Hartmut Euer, Wessobrunnerstrasse 7, D-8035 Gauting, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 683,943, May 6, 1976, abandoned. This application Aug. 5, 1977, Ser. No. 822,421
Claims priority, application Fed. Rep. of Germany, May 13, 1975, 2521176
Int. Cl.[2] G01D *11/10*
U.S. Cl. 73—430 19 Claims

1. An electromagnetic torsion stiffness arrangement with integrated auxiliary elements, comprising: a position sensor; a current-carrying conductor having a rest position and being a primary winding on said position sensor; magnetic field means applying restoring forces on said current-carrying conductor when moved from its rest position, the magnitudes of said restoring forces being dependent on variation of current carried by said conductor, said conductor acting as a primary winding of said position sensor on exciting winding acting as a



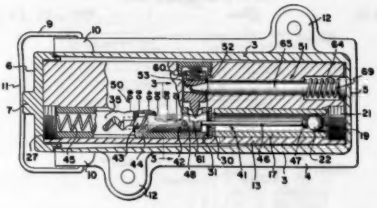
secondary winding, said conductor carrying an alternating current having a relative amplitude and phase in comparison to that of said secondary winding which is dependent on the movement of said conductor from said rest position.

4,198,864

VELOCITY CHANGE SENSOR AND RECORDER

David S. Breed, Boonton, N.J., assignor to Breed Corporation, Fairfield, N.J.

Filed Aug. 31, 1978, Ser. No. 938,467
Int. Cl.[2] G01P *15/04*
U.S. Cl. 73—492 22 Claims



1. A velocity change sensor comprising a housing; a displaceable mass carried by said housing for movement relative thereto along a path in a direction from a rest position to an adjusted position in response to a change in velocity of said housing; and means for retaining said mass in said adjusted position, said retaining means including a plurality of particles independent of said mass and independent of one another and movable along said path with said mass, the relative positions of said mass and said particles being such that the latter trail the movement of said mass along said path.

4,198,865

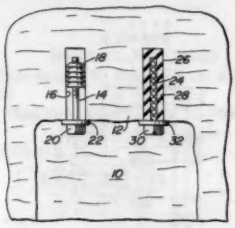
APPARATUS AND METHOD OF MONITORING ANCHORED BOLTS

William B. Tarpley, Jr., West Chester, and Donald R. Culp, Norristown, both of Pa., assignors to Energy & Minerals Research Co., Exton, Pa.

Filed Jul. 24, 1978, Ser. No. 927,712
Int. Cl.[2] G01N *19/01*
U.S. Cl. 73—582 9 Claims

1. A method of testing the integrity of attachment of a bolt comprising:

(a) introducing vibratory energy into an exposed end portion of a bolt anchored in a substrate,



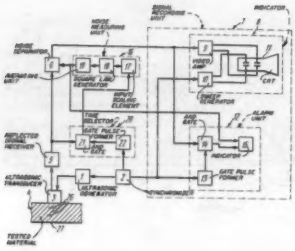
(b) ascertaining the amount of vibratory energy transmitted through the bolt and its attachment and absorbed by the substrate.

4,198,866

METHOD AND DEVICE FOR ULTRASONIC INSPECTION OF MATERIALS

Sergei B. Birjukov; Valery S. Gavrev; Jury M. Goncharuk; Alexandr V. Savitsky, and Viktor A. Lonchak, all of Kishinev, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Po Razrabotke Nerazrushajuschikh Metodov I Sredstv Knotrolya Kachestva Materialov"VNIINK", Kishinev, U.S.S.R.

Filed Sep. 7, 1978, Ser. No. 940,493
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—613 **6 Claims**



1. A method for ultrasonic inspection of materials, comprising: radiating ultrasonic vibrations into a material being tested; receiving and processing the reflected ultrasonic vibrations; automatically setting a noise cut-off level for each period of radiation of ultrasonic vibrations, which level is equal to the mean power of said noise over an interval of time selected within the maximum sensitivity zone of a preceding period of radiation of ultrasonic vibrations;

separating signals from noise at said preset level; and recording the results of the inspection.

4,198,867

TEMPERATURE COMPENSATING MEANS FOR PRESSURE MEASURING APPARATUS

Everett O. Olsen, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Division of Ser. No. 834,481, Sep. 19, 1977, Pat. No. 4,165,651. This application Nov. 22, 1978, Ser. No. 962,988
Int. Cl.[2] G01L *11/00, 13/00*
U.S. Cl. 73—704 **3 Claims**

1. A vibratable-wire instrument for producing a measurement signal corresponding to an applied differential pressure, comprising:

body means providing an interior cavity with openings at first and second opposite ends of said body means;

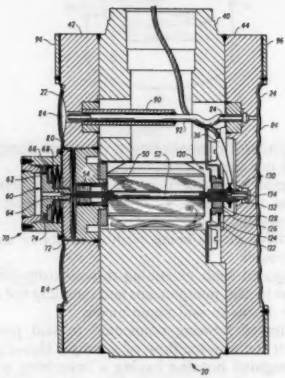
first and second diaphragms secured to said body means and sealing off said first and second openings respectively to define a closed internal chamber, said diaphragms being arranged to receive on their outer surfaces respective fluid pressures the differential of which is to be measured;

a fill-liquid in said closed chamber;

a vibratable wire of small cross-section coupled at one end thereof to the central region of said first diaphragm and extending away therefrom substantially to the central region of said second diaphragm;

said first diaphragm being arranged to apply a pulling force to said one wire end corresponding to said differential pressure;

small-diameter tubular wall means forming an elongate passageway surrounding said wire throughout at least a substantial portion of its length extending from said first diaphragm towards said second diaphragm;



means securing the other end of said wire to prevent movement of said other wire end in response to tension applied by said first diaphragm within the operating range of said instrument;

said closed chamber in said body means including an ancillary section of relatively large volume disposed radially outwardly with respect to the axial line of said wire substantially beyond the wall of said elongate passageway;

a mass of material substantially filling said ancillary chamber section;

the temperature coefficient of expansion of said mass of material being substantially less than that of said body means defining said closed chamber;

the volume of said mass of material being predeterminedly related to the temperature-induced expansion characteristics of said fill-liquid and said body means to provide for changes in net volume of said chamber substantially corresponding to changes in volume of said fill-liquid;

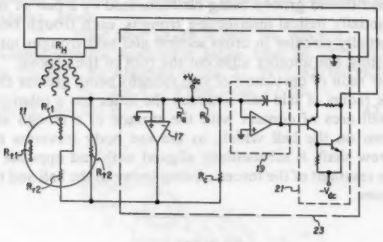
said ancillary chamber section with said mass of material therein communicating with one end of said tubular passageway while providing for open communication of said fill-liquid between said one passageway end and the adjacent diaphragm.

4,198,868

STRAIN GAUGE APPARATUS AND MEANS FOR TREATING TEMPERATURE DEPENDENCY

Wesley G. Runyan, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 12, 1979, Ser. No. 11,252
Int. Cl.² G01L *19/04*
U.S. Cl. 73—708 **6 Claims**



1. Strain gauge characteristic stabilization apparatus comprising:

resistance means R_y and R_z each including different strain sensitive resistance means which vary in opposite directions with variations in strain and vary in the same direction with variations in temperature, R_y and R_z being connected in parallel to form a composite resistance $R_yR_z/(R_y+R_z)$ hereinbelow referred to as R_{cmp},

temperature conditioning means sufficiently proximate said strain sensitive resistance means to influence the temperature thereof,

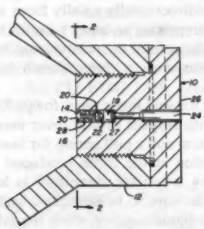
circuit means connected between R_{cmp} and said temperature conditioning means for (i) sensing deviation in R_{cmp} from a predetermined resistance value R_p and (ii) causing said temperature conditioning means, in response to said deviation, to effect, through temperature control of said strain sensitive resistance means, substantial equality between R_{cmp} and R_p.

4,198,869

APPARATUS FOR PERMANENTLY INDICATING MAXIMUM GAS PRESSURE IN A SYSTEM

Andrew B. Mayernik, McKeesport Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1979, Ser. No. 13,769
Int. Cl.² G01L *7/16*
U.S. Cl. 73—709 **4 Claims**



1. In an apparatus for providing a permanent indication of the maximum force attained in a system, said apparatus including a housing having a straight longitudinal passage therein, a sample of uniformly compressible material fixedly mounted in said passage, and a penetrator having an indentor forcing said sample slidably mounted in said passge,

the improvement in said apparatus for measuring the maximum pressure of gas in a vessel over its service life which comprises:

said housing having an inner end exposed to the gas within said vessel and an outer end exposed to the atmosphere external thereto,

the passage in said housing extending outwardly from the inner end thereof partially through said housing,

said sample being mounted in said passage adjacent the outer end thereof,

said penetrator being mounted in said passage adjacent the inner end thereof,

means for retaining said penetrator in said passage without preventing flow of gas thereto, said penetrator being mounted in said passage with a minimum of clearance such that the axis of said penetrator remains substantially parallel to the axis of said passage during movement therealong, but in any event said clearance permitting gas from said vessel to leak along said passage to a location between said sample and the penetrator, and

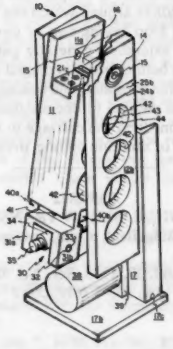
a vent extending from the outer end of said housing to said passage adjacent said sample so as to relieve buildup of gas pressure tending to resist movement of said penetrator toward the sample thus preventing any inaccuracy of readings which might be caused thereby.

4,198,870

CONSTANT POINT OF LOAD APPLICATION FRACTURE SPECIMEN LOADING MACHINE

Lynn M. Barker, Salt Lake City, and Randall V. Guest, Bountiful, both of Utah, assignors to Terra Tek, Inc., Salt Lake City, Utah

Filed Nov. 9, 1978, Ser. No. 959,202
Int. Cl.² G01M *5/00*
U.S. Cl. 73—799 **20 Claims**



1. A constant point of load application fracture specimen loading machine consisting of,

a plurality of lever arms;

means for pivotally connecting together said lever arms;

a pair of grips each secured to a lever arm below said pivot means, which grips, when said lever arms are pivoted together, fit within grip grooves of a test specimen, which grips, when said lever arms are pivoted apart, are moved therewithin in an arc that approximates an arc of travel that is made by segments of said test specimen as it splits apart;

means for pivoting apart said lever arms; and

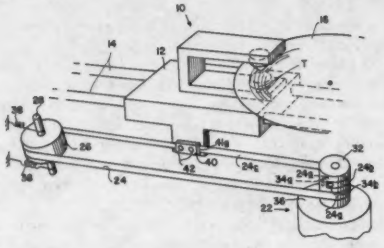
means for measuring the load applied to said test specimen through the lever arms.

4,198,871

TRANSDUCER POSITIONING APPARATUS

David S. Dunn, Windham; R. Bruce Gifford, Nashua, both of N.H., and Edward F. Burke, Jr., Reading, Mass., assignors to MFE Corporation, Salem, N.H.

Filed Feb. 27, 1978, Ser. No. 881,749
Int. Cl.[2] F16H *19/06*
U.S. Cl. 74—37 **11 Claims**



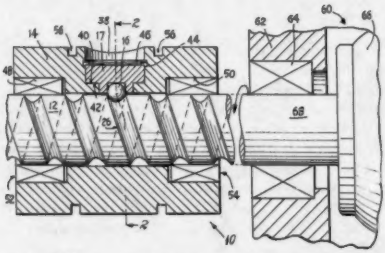
1. Transducer positioning apparatus comprising
A. means defining a track,
B. a carriage,
C. a rotatable capstan,
D. a motor for rotating the capstan in either direction about its axis,
E. flexible belting, said belting having end segments wrapped around said capstan from opposite directions at axially spaced locations on the capstan,
F. means for securing the ends of said segments to the capstan, the amount of wrap of said belting segments being such that when either segment unwinds from the capstan as the capstan is rotated until its securing means approaches the point of departure of that segment from the capstan, the other segment does not wind up on the capstan to the extent that it wraps upon itself,
G. one or more idlers around which the belting is trained to form a belting loop having two or more stretches, one of said stretches extending generally parallel to said track, said idlers and belting being arranged and adapted so that when the capstan is rotated, the belting segments wrapped thereon remain parallel to one another, and
H. means for connecting the carriage to the belting intermediate the ends of said one belting stretch.

4,198,872

MECHANICAL SCREW TRANSMISSION

Joseph R. Metz, Ridgefield, Conn., assignor to Norco, Inc., Ridgefield, Conn.

Filed Jul. 28, 1978, Ser. No. 929,196
Int. Cl.[2] F16H *25/12*
U.S. Cl. 74—57 **19 Claims**



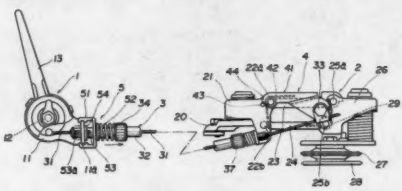
1. A low-friction mechanical transmission for converting between rotary and linear motion, comprising in combination:
(a) an elongate screw shaft having a helical thread groove,
(b) a ball disposed in said groove,
(c) a nut body movable along said screw shaft and having a recess in which the ball is received,
(d) said recess having a circular load surface surrounding a circumference of the ball and engageable therewith, and having another load surface centrally disposed with respect to said circular load surface and displaced laterally therefrom, said other load surface being engageable with a small area of the ball,
(e) said thread groove being characterized by a pair of substantially helical intersecting troughs, each trough being partially circular in cross section and said troughs intersecting one another adjacent the root of the groove,
(f) the radii of curvature of said troughs being greater than the radius of said ball whereby the latter has a relatively small area of contact with the surface of a trough at a point on the ball which, as the nut body traverses the screw shaft, is substantially aligned with and opposite to the resultant of the forces existing between the ball and the recess.

4,198,873

SPEED CHANGING DEVICE FOR A BICYCLE AND THE LIKE

Masashi Nagano, Sakai; Hideaki Fujimoto, and Mitsuhide Isobe, both of Toyonaka, all of Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Filed Jun. 15, 1978, Ser. No. 915,886
Claims priority, application Japan, Jul. 1, 1977, 52-79414; Jul. 1, 1977, 52-79415
Int. Cl.[2] F16H *9/00*; F16C *1/10*
U.S. Cl. 74—217 B **17 Claims**



1. A wire control system speed changing device for a chain driven vehicle, said device comprising:
a lever provided at a steering side of the vehicle;
a derailleur provided adjacently to multi-speed sprockets of the vehicle and operating in response to movement of said lever, said derailleur including a chain guide for switching a driving chain from one of said sprockets in mesh therewith to another sprocket and a return spring biasing said chain guide unidirectionally axially from said sprockets;
a control cable comprising an inner wire for connecting said lever and derailleur so as to transmit said lever movement to said derailleur and an outer sheath for guiding said inner wire;
a pull mechanism for said inner wire, for pulling said wire to be stretched with respect to said lever means comprising one swingable arm and a pull spring for biasing said arm in the same direction as the force produced by said return spring, whereby when the derailleur is locked the pull spring allows the wire to be stretched; and
an adjustment mechanism acting when the relative effective length between said wire and said outer sheath varies loosening said wire with respect to said outer sheath during operation of said pull mechanism, thereby absorbing the change of length, comprising a fixing member, an outer sheath stop having a control member supported moveably to said fixing member, a biasing member for biasing said outer sheath stop toward said pull mechanism, and engaging means in engagement with said control member whereby said length is changed to automatically

move said outer sheath stop thus absorbing said change of length.

4,198,874

DERAILLEUR FOR BICYCLES AND SIMILAR VEHICLES

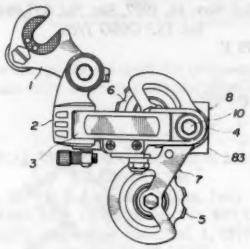
Masashi Nagano, Sakai, and Mitsuhide Isobe, Toyonaka, both of Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Filed May 15, 1978, Ser. No. 905,973

Claims priority, application Japan, May 20, 1977, 52/59211; Sep. 27, 1977, 52/130393[U]; Sep. 27, 1977, 52/130394[U]

Int. Cl.² F16H *9/00, 11/00*

U.S. Cl. 74—217 B **12 Claims**



1. A derailleur for shifting a driving chain to one of multi-speed sprockets of a vehicle said derailleur comprising;

a base member;

a movable member movably supported to said base member,

a change-over frame pivotally supported to said movable member, said change-over frame comprising a single plate and carrying a tension and a guide pulley in relation of being rotable, said tension and guide pulleys having teeth in mesh with said driving chain respectively;

a chain holder;

means for mounting said chain holder to said change over frame;

whereby said chain holder is movable radially outward from said guide pulley with respect to said change-over frame, for disengaging said chain from said guide pulley without cutting said chain; and

means for fixing said chain holder in a position for preventing said chain from disengaging from said pulley when said chain holder is moved inward of said guide pulley.

4,198,875

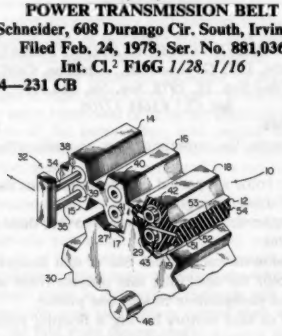
POWER TRANSMISSION BELT

Daniel J. Schneider, 608 Durango Cir. South, Irving, Tex. 75062

Filed Feb. 24, 1978, Ser. No. 881,036

Int. Cl.² F16G *1/28, 1/16*

U.S. Cl. 74—231 CB **5 Claims**



1. A belt capable of transmitting power from a moving member to a pulley with grooves spaced about the periphery, said belt comprising:

a plurality of teeth spaced along the belt for engaging the grooves to turn the pulley,

at least one connector means, in one of said teeth, for transmitting motion of the moving member to the belt; and

at least one reinforcing cord running longitudinally in the belt and wrapped around said connector means to thereby engage said connector means.

4,198,876

MULTI-STAGE SPROCKET ASSEMBLY FOR A BICYCLE

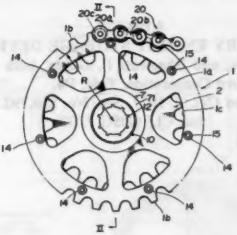
Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 9, 1978, Ser. No. 958,974

Claims priority, application Japan, Nov. 14, 1977, 52-153062[U]

Int. Cl.² F16H *55/30, 9/00*

U.S. Cl. 74—243 R **8 Claims**



1. A multi-stage sprocket assembly for use with a driving chain of a bicycle, comprising at least two different diameter sprockets having a large number of teeth for meshing with a driving chain and a connecting member for connecting said sprockets together in axial alignment with regular intervals therebetween, at least one of the axially outermost sprockets of said connected sprockets being provided at the laterally outer surface of its body with a plurality of projections, said projections extending axially outwardly of said at least one sprocket in a direction away from said connected sprockets and positioned circumferentially of said body and radially inwardly of the dedendum circle of said at least one sprocket, said projections receiving a shifted chain which rides over said one sprocket.

4,198,877

CONTROL CABLE FAIL SAFE DEVICE

Don W. Huling, Kent, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 7, 1978, Ser. No. 922,603

Int. Cl.² F16C *1/10*

U.S. Cl. 74—501 R **5 Claims**

1. A two cable control mechanism capable of sensing a cable failure and modifying its structure to respond thereafter as if the mechanism is in the form of a tension loaded single cable system, comprising:

a. a fixed mounting bracket;

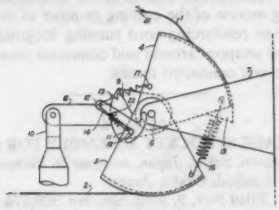
b. a means for producing mechanical output pivotally attached to the mounting bracket;

c. two independently rotatable quadrant halves, each having attached thereto one of the cables and making contact with the means for producing a mechanical output such that variations in unbalanced cable tension produce corresponding variations in the mechanical output;

d. a means responsive to the occurrence of a cable failure for locking the quadrant half having the operable cable with

the means for producing mechanical output, which means is actuated by relative movement of the quadrant halves;

e. a means for producing tension in the cables by acting between the two quadrant halves; and



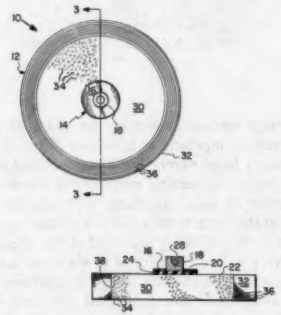
f. a fixed stop between the quadrant halves for limiting the rotation of the quadrant half having the broken cable.

4,198,878

ROTARY ENERGY STORAGE DEVICE

Armand F. Lewis, and Bhagwati P. Gupta, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Oct. 3, 1977, Ser. No. 838,792
Int. Cl.[2] G05G *1/00*
U.S. Cl. 74—572 **8 Claims**



1. A rotary energy-storage device comprising:

(a) a core that is free of any opening through it and includes a multiplicity of anisotropic elements embedded in a resin matrix; the core being rotatable about an axis passing through said core, and having an outer periphery that circumscribes the axis of rotation; at least a portion of said multiplicity of anisotropic filaments being oriented (i) other than circumferentially of the axis of rotation and (ii) transversely of each other so as to produce, to an approximately equal degree along each of at least two axes that are oriented transversely of each other and parallel to at least some of said transversely oriented filaments, resistance to radial and tangential stresses imposed on the core when it is rotated about the axis of rotation, said stress resistance produced by said transversely oriented filaments being greater than a corresponding stress resistance offered by the resin matrix along; and

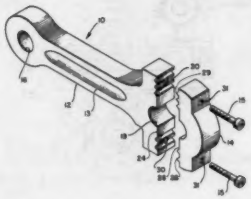
(b) shell means for enclosing and snugly fitting the circumferential surface defined by the outer periphery of the core; the shell means including (i) filamentary means providing a plurality of substantially parallel and juxtaposed filament portions oriented to circumscribe the circumferential surface of the core, and (ii) matrix means encasing the filament portions of the filamentary means and bonding adjacent filament portions to one another; the filamentary means having a tensile modulus such that the shell means is more resistant to circumferential expansion than the core so as to impede circumferential expansion of the core in response to centrifugal loads applied on the core due to rotation of the energy-storage device about said axis of rotation; said core and said shell means each having an outer diameter measured generally normal to the axis of rotation, the ratio of the outer diameter of the core to the outer diameter of the shell means being at least 3:8.

4,198,879

METHOD FOR THE MANUFACTURE OF CONNECTING RODS FOR SMALL RECIPROCATING ENGINES

Michael A. Hornak, Walnut, and Fred E. Edward, San Gabriel, both of Calif., assignors to Calnetics Corporation, Cerritos, Calif.

Filed Nov. 14, 1977, Ser. No. 851,096
Int. Cl.[2] G05G *1/00*
U.S. Cl. 74—579 E **7 Claims**



1. A method for the manufacture of connecting rods for small reciprocating engines from rolled steel having sufficient carbon content so as to minimize the subsequent case hardening and thereby provide for minimal scrappage of defective rods due to warpage comprising:

blanking the rod configuration from rolled steel of appropriate thickness;

deburring of the rod blank;

drilling and tapping of dual bolt holes used in mating the shank and cap of said rod;

broaching the crank pin bearing bore;

copper plating the entire surface of said rod;

drilling out bores of said rod thus exposing steel surface of the interior diameters of said bores;

case hardening said interior diameters to an effective case depth of 0.020–0.030 inches per side;

heat treating said rod to a surface hardness in the range of 58–62 Rockwell, C Scale, and a core hardness in the range of 20–35 Rockwell, C Scale; and

honing the inner diameters of said bores to the appropriate close tolerances.

4,198,880

ROTOR DRIVE FOR PULSATO APPARATUS

Donald J. Leslie, 1561 Gaywood Dr., Altadena, Calif. 91001

Filed Sep. 21, 1978, Ser. No. 944,419
Int. Cl.[2] F16H *37/06*
U.S. Cl. 74—661 **11 Claims**

1. In apparatus for superimposing acoustic effects upon sound:

(a) a pulsato rotor supported for rotation about its axis;

(b) a pair of drive motors;

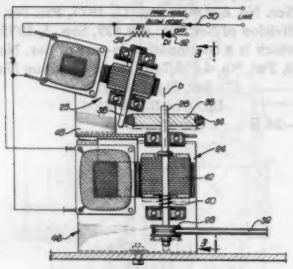
(c) means supporting the drive motors so that their shafts are non-parallel;

(d) transmission means between one of said motors and said pulsato rotor for operating said pulsato rotor at pulsato speed upon energization of said one motor;

(e) said one of said motors having a floating rotor axially movable to a running position upon energization thereof, and biased to retract from said position;

(f) means forming a releasable wedging coupling between

said motor shafts operative upon de-energization of said one of said motors for braking said one motor; and



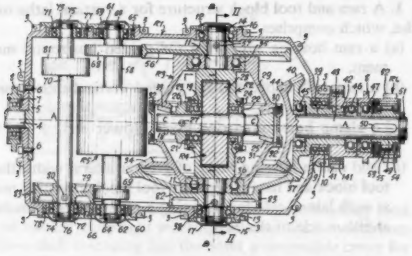
(g) selective energization circuits for said motors for driving said pulsato rotor at chorus or pulsato speeds.

4,198,881

ROTATIONAL SPEED AND TORQUE MECHANICAL TRANSDUCER

Gino Franch, 10, Via G.Avezzana, Milan, Italy

Filed Mar. 17, 1978, Ser. No. 887,732
Claims priority, application Italy, Jul. 1, 1977, 4845 A/77
Int. Cl.² F16H *37/06*
U.S. Cl. 74—665 R **10 Claims**



1. A rotational speed and torque mechanical transducer between a motor and a utilizer which presents a variable torque and a variable rotational speed, comprising in combination:

(a) an outer rotor connected to the motor through a power input shaft;

(b) a transverse shaft rotatably mounted at the interior of the outer rotor, transversally with respect to the longitudinal or rotation axis of the outer rotor, said transverse shaft presenting an inner rotor secured thereon;

(c) a second shaft rotatably mounted in the inner rotor, arranged at right angles with respect to the axis of rotation of the inner rotor, and lying in the plane of the longitudinal axis of the outer rotor, said second shaft carrying secured thereon a central or core rotor which is formed as an active mass, rotatably arranged in a recessed portion of the inner rotor;

(d) an intermediate rotor rotatably mounted around the axis of rotation of the inner rotor, said intermediate rotor being operatively connected through a gear transmission with the shaft of the central rotor and through another gear transmission with a main output shaft, while the shaft of the inner rotor is connected through still another gear transmission with an auxiliary output shaft which is coaxial to the said main output shaft;

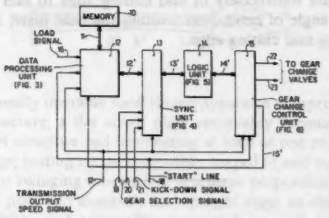
the design and arrangement of the above mentioned components being such that a torque parallel to the axis of rotation of the central rotor, and a torque parallel to the axis of rotation of the inner rotor act together onto the active mass of the central rotor, as a consequence of the angular speeds of the outer rotor, of the inner rotor and of the central rotor and of the resulting forces of Coriolis, and the sum of the means values of the powers and torques transmitted by the power input shaft, by the main output shaft and by the auxiliary output shaft is equal to zero.

4,198,882

AUTOMATIC TRANSMISSION DIGITAL CONTROL SYSTEM

Uwe Kiencke, Ludwigsburg, and Martin Zechnall, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,441
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658464
Int. Cl.² B60K *41/18*
U.S. Cl. 74—866 **11 Claims**



1. Digital control system for an automatic transmission, particularly for automotive use, adapted for connection to a driving engine, comprising

a load signal line (16) carrying a signal representative of loading placed on the engine;

a speed signal line (17) carrying a signal representative of a shaft speed in the transmission;

a memory (10) storing gear change characteristic functions relating output speed of the transmission and loading on the engine to suitable gear selection in the transmission;

a digital data processing means (12, 13, 14) having said signals applied thereto and connected to said memory (10), said processing means comparing operating parameters of the transmission at the then engaged gear as represented by said speed signal and said load signal on the respective speed signal and load signal lines with the ideal operating parameters as represented by said gear change characteristic function stored in the memory, and providing computed gear change output signals if said comparison indicates that the actual operating parameters and the operating characteristics as represented by said characteristic function, at the engaged gear, differ;

and a gear change control unit (15) controlled by said data processing means (12) and providing control signals (115, 116) to the gear change mechanism under command of said gear change output signals.

4,198,883

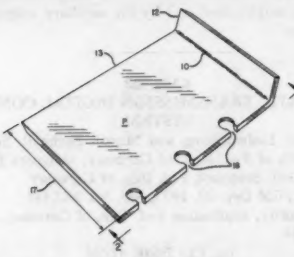
PROCESS FOR MANUFACTURING BENT KNIVES

Fred L. Miller, 17353 SW. Canal Cir., Lake Oswego, Oreg. 97034

Filed Sep. 8, 1978, Ser. No. 940,789
Int. Cl.² B21K *21/00*
U.S. Cl. 74—101 R **4 Claims**

1. The process of manufacturing a bent knife for a wood cutting machine wherein the knife is bent transversely of its cutting edge to a predetermined angle with a predetermined

inside radius of bend, comprising the steps of providing a flat metal plate, finish grinding the opposite faces of said plate to a plate thickness that will provide a ratio of inside bend radius to plate thickness not less than 2.25, rough grinding a bevelled



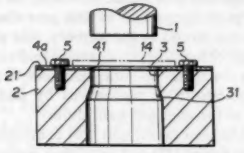
cutting edge on one edge of said flat plate, heating and bending said plate transversely of said cutting edge to said predetermined angle of bend, heat treating the bent plate, and finish grinding said cutting edge.

4,198,884

METHOD OF MANUFACTURING A PUNCHING DIE

Takeo Nakagawa, No. 2578-1, Noborito, Tama-ku, Kawasaki-shi, Kanagwa-ken, Japan; Kiyoshi Suzuki, Misato, Japan, and Hiroyasu Okawa, Mitaka, Japan, assignors to Aida Engineering, Ltd. and Takeo Nakagawa, both of Kanagawa-ken, Japan

Filed Apr. 3, 1978, Ser. No. 892,847
Claims priority, application Japan, Apr. 1, 1977, 52/36086
Int. Cl.[2] B21K *5/20*
U.S. Cl. 76—107 R **6 Claims**



1. A method of manufacturing an easy punching die reinforced by a superimposed thin plate of hard properties, comprising the steps of:

(a) preparing a punching die body, said body comprised of a material which is easily machinable, said body being manufactured by means of a hobbing process;

(b) superimposing on a surface of said punching die body, a thin plate harder than said die body;

(c) punching said thin plate by means of a hardened steel punch; and

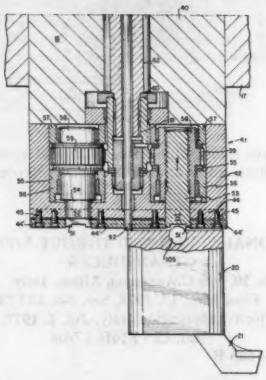
(d) fixing said punched thin plate onto said surface of said die body.

4,198,885

RAM AND TOOL BLOCK FOR VERTICAL LATHE

Claude M. Grinage, Stratford, Conn., assignor to The Bullard Company, Bridgeport, Conn.

Division of Ser. No. 832,404, Sep. 12, 1977, Pat. No. 4,141,133, which is a division of Ser. No. 609,429, Sep. 2, 1975, Pat. No. 4,084,462, which is a continuation-in-part of Ser. No. 506,584, Sep. 16, 1974, Pat. No. 4,038,740. This application Nov. 1, 1978, Ser. No. 956,612
Int. Cl.[2] B23B *9/06*
U.S. Cl. 82—24 R **5 Claims**



1. A ram and tool block structure for a vertical lathe or the like, which comprises

(a) a ram housing supported for guided horizontal movement,

(b) a ram quill supported for guided vertical movement in said housing,

(c) a clamp housing carried by the lower end of said ram quill,

(d) said clamp housing being of greater lateral width than a tool block and having separate tool block clamping means at each lateral side for clamping a tool block alternatively at either side of the ram.

4,198,886

DEFLASHING APPARATUS

Kenneth E. Bowers, Prairie Village; Stephen E. Merritt, and William G. Kinslow, Jr., both of Kansas City, all of Mo., assignors to Ethyl Development Corporation, Baton Rouge, La.

Filed Sep. 12, 1978, Ser. No. 941,460
Int. Cl.[2] B26D *7/06*
U.S. Cl. 83—112 **10 Claims**

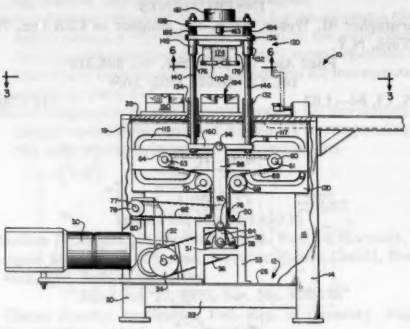
1. An apparatus for removing flash from a plastic article, which apparatus comprises:

a. a nest, said nest having a concave portion for receipt of said article having flash, whereby said flash is positioned in a horizontal plane;

b. an anvil, said anvil having a concave portion for receipt, from said nest, said article having flash and having striking edges which follow the line of juncture between said article and said flash;

c. punch means for striking said flash at said line of juncture to disjoin said flash from said article;

d. power means to power said punch means to achieve said strike; and



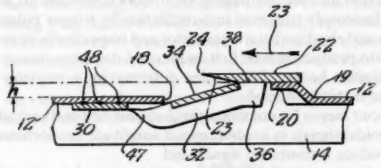
e. powered shuttle means for moving said article having flash from said nest to said anvil and for moving the deflashed article from said anvil to a discharge point.

4,198,887

JULIENNE CUTTER TOOL

William A. Williams, Jr., Danbury, Conn., assignor to Wilson Research & Development, Inc., Greenwich, Conn.

Filed Feb. 2, 1978, Ser. No. 874,655
Int. Cl.² B26D *3/26*
U.S. Cl. 83—356.3 **7 Claims**



1. In rotary food processing apparatus for processing food material having an upright working bowl with a motor-driven tool drive shaft extending into the bowl, a removable cover for closing the bowl when in use, and a feed passage through said cover for introducing food material into the bowl, in which a rotary tool is used in the bowl having a hub removably engageable with said drive shaft to be rotated thereby in a predetermined direction of rotation about an axis and with a disc-like member secured to the hub for rotation therewith, said disc-like member having cutting means thereon in the form of a primary blade positioned at an elevated location relative to the upper surface of said disc-like member, said primary blade extending from a smaller radius region to a larger radius region relative to the hub, said primary blade having a sharp leading edge which sweeps rearwardly with respect to the direction of rotation of said disc-like member about said axis, and with an opening defined by said disc-like member generally aligned with said primary blade and sweeping rearwardly like said primary blade for accommodating the passage of cut food material through said opening, said opening having a leading edge which is forward of the cutting edge of said primary blade with respect to said direction of rotation, the improvement for making julienne strips which comprises:

an elongated strip of metal mounted below said disc-like member,

said elongated strip sweeping rearwardly in conformance with the cutting edge of said primary blade,

a plurality of radially spaced secondary cutting blades extending upwardly from and being integral with said elongated strip,

said secondary cutting blades being radially spaced with respect to said axis and each being oriented concentric about said axis,

each of said secondary cutting blades having a sharp leading edge, and

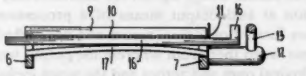
the upper ends of said secondary cutting blades being positioned close to said primary blade for producing cuts in food material substantially perpendicular to the cut produced by said primary blade for making julienne strips from food materia:.

4,198,888

SLICING APPARATUS

Frank R. Gatt, Box Hill, Australia, assignor to Charles Anthony Gatt, et al., Box Hill, Australia

Filed Jul. 3, 1978, Ser. No. 921,734
Claims priority, application Australia, Jul. 6, 1977, PD0726
Int. Cl.² B26D *4/42, 7/16*
U.S. Cl. 83—467 R **4 Claims**



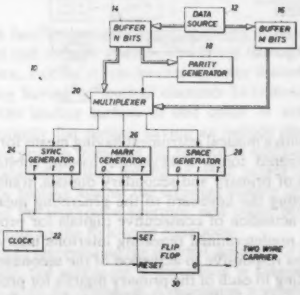
1. A manually operable food slicing apparatus comprising a support structure; a flat cover plate removably mounted on said support structure and terminating at least at one end in a straight edge; cutting means removably hinged to said support structure for swinging movements in a plane perpendicular to that of said plate and alongside said straight edge; an elongate tongue slidably and removably supported by said support structure beneath said plate, one end of said tongue extending beyond said straight edge of said plate; a stop member carried by said tongue at said one end of the latter, said stop member upstanding from said tongue a distance sufficient to enable said stop member to project above said plate; and resilient means reacting between said support structure and said tongue for releasably maintaining the latter in a selected position of adjustment relative to said support structure and in which position said stop member is releasably maintained in a selected position spaced from said straight edge of said plate.

4,198,889

MODULATION CIRCUITRY FOR USE IN A MUSIC ENCODING SYSTEM

Charles R. Groeschel, 2402 Ansbury, Houston, Tex. 77018

Filed Jan. 7, 1977, Ser. No. 757,751
Int. Cl.² G10H *1/00*
U.S. Cl. 84—1.01 **7 Claims**



1. Apparatus for use with a data source which provides digital signals indicative of closure of keys on a keyboard

instrument for transmission to another location, the modulating equipment comprising:

(a) input means for presenting digital data representative of the keys of a keyboard instrument which keys are subject to being played and wherein said keys are input in at least two groups of selected keys such that all keys are in designated groups;

(b) multiplexer means for scanning the digital data input means representative of the condition of the keys of the keyboard instrument which scanning occurs in a predetermined sequence and pattern, which pattern is defined by said input means in at least two groupings of size less than the sum of the keys of the keyboard so that the key condition is identified by a signal of the group and keys in the group;

(c) output means forming a binary signal;

(d) generator means connected to said multiplexer means, said generator means being operated by signals from said multiplexer means to form output signals for driving said output means which signals are characterized by the formation at said output means of a procession of binary pulses formed of logical zeroes and ones which define an output word therefrom wherein the output word encodes the logical ones and zeroes and the word includes a signal uniquely identifying a particular group of keys and the play condition of keys in that group; and

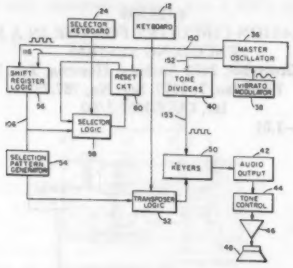
(e) wherein said generator means includes a generator forming an output pulse for driving said output means and a second generator functioning similar to the first, said output wave forms differing by a ratio of one time unit to three time units where the three time units are divided, one unit to one polarity and two units to the opposite polarity.

4,198,890

KEYBOARD SYSTEM FOR MUSICAL INSTRUMENTS

Carman J. Massey, 1925 Father Ryan Dr., Biloxi, Miss. 39530, and Paul N. Alito, 8321 Prichard Pl., New Orleans, La. 70118

Filed Jan. 4, 1978, Ser. No. 866,923
Int. Cl.[2] G10H *1/02, 5/00*
U.S. Cl. 84—1.01 **10 Claims**



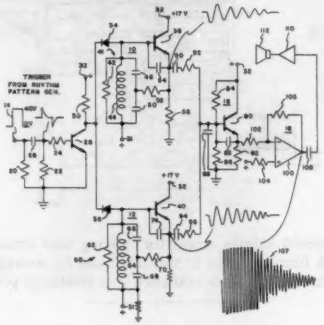
1. For use with a musical instrument having means for generating equitempered tones, a keyboard having substantially parallel banks of primary and secondary digitals, transposing means connecting the keyboard to the generating means and responsive to actuation of consecutive digitals for producing the tones in a predetermined repeating intertone interval pattern, and means responsive to actuation of the secondary digital corresponding to each of the primary digitals for producing the tones that are respectively one-half tone intervals and or below the tones produced by actuation of the primary digitals, each of the primary digitals being aligned with the secondary digitals corresponding therewith to form a group of three keys.

4,198,891

CIRCUIT FOR SIMULATING SOUNDS OF PERCUSSIVE INSTRUMENTS

Christopher M. Weber, Alsip, Ill., assignor to CBS Inc., New York, N.Y.

Filed Apr. 11, 1978, Ser. No. 895,318
Int. Cl.[2] G10H *1/02, 5/04*
U.S. Cl. 84—1.03 **11 Claims**



1. In an electronic organ including a rhythm pattern generator for producing a predetermined sequence of trigger pulses, and a loudspeaker, apparatus for producing an electrical signal which when reproduced by said loudspeaker simulates the sound produced when a skin head percussive instrument is struck, said apparatus comprising:

at least first and second ringing oscillators connected to be simultaneously triggered into oscillation by trigger pulses from said rhythm pattern generator and respectively operative to produce at least first and second decaying sinusoidal signals having frequencies differing by a predetermined musical interval,

first circuit means for combining said at least first and second sinusoidal signals in predetermined amplitude proportions to produce a combined signal, and

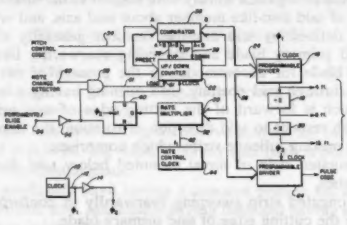
second circuit means for distorting said combined signal and producing an output electrical signal containing frequency components not contained in said combined signal which when reproduced simulates the sound of a skin head percussive instrument.

4,198,892

TONE GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENT WITH DIGITAL GLISSANDO, PORTAMENTO AND VIBRATO

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Lincolnwood, Ill.

Filed Nov. 16, 1978, Ser. No. 961,222
Int. Cl.[2] G10H *1/02, 5/00*
U.S. Cl. 84—1.25 **34 Claims**



1. A tone generator for use with a musical instrument comprising:

clock means operable for developing a clock signal;

counting means characterized by a plurality of states, said counting means being enableable for incrementally changing state in response to said clock signal;

means for operating said clock means for developing a clock signal having a repetition rate related to the state characterizing said counting means; control means operable for selectively enabling said counting means for incrementally changing state; and

means responsive to said counting means for developing an output tone signal having a frequency corresponding to the state characterizing said counting means.

4,198,893

DAMPER FOR PIANOS

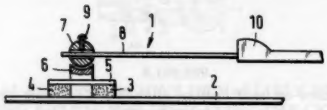
Nikolaus Schimmel, Wolfenbuttel, Fed. Rep. of Germany, assignor to Wilhelm Schimmel Pianofortefabrik GmbH, Brunswick, Fed. Rep. of Germany

Filed Jul. 27, 1978, Ser. No. 928,576

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 2734700

Int. Cl.[2] G10C *3/16*

U.S. Cl. 84—255 **7 Claims**



1. A piano damper comprising a pivotal supporting rod, a damper block secured to said rod for selective axial displacement therealong, the entire outer surface of said damper block being convexedly curved and rotationally symmetrical about at least one of its axis, a damper head having a planar base, a damper pad on one surface of said base adapted to engage the piano wire and a concave seat on its other surface having a curvature complementing the surface of said damper head for adhesively receiving said damper head.

4,198,894

BASS DRUM PEDAL

Clifford A. Della-Porta, and Peter J. F. B. Spenlove-Spenlove, both of Leicester, England, assignors to The Premier Drum Company Limited, Leicester, England

Filed Aug. 22, 1977, Ser. No. 826,347

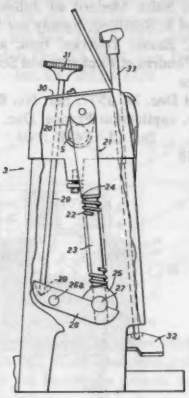
Claims priority, application United Kingdom, Aug. 27, 1976, 35674/76

Int. Cl.[2] G10D *13/00*

U.S. Cl. 84—422 R **2 Claims**

1. In a pedal for a bass drum having a base; a food plate pivotally coupled to said base; support means extending from said base and an arm extending from said support means over said foot plate; a beater crank pivotally mounted on said arm; attachment means provided on said beater crank, said attachment means for receiving a shank portion of a beater head; a linkage extending between a toe portion of said foot plate and said beater crank; a compression spring operatively coupled to said foot plate and mounted in relation to the said base so as to be compressed upon depression of said foot plate,

the improvement comprising a rigid rod in contact with said compression spring such that said compression spring is constrained from buckling during its compression and relaxation, said rod acting as a sleeve for said compression spring, and wherein said rod has abutment means against which one end of said compression spring abuts, said compression spring being slideable relative to a stop member disposed on the support means against which the other end of the compression spring abuts, said stop member being adjustable so as to permit regulation of the degree of compression of said compression spring, and further wherein said stop member is pivotally mounted on said support means and comprises a member having a bore therein large enough to permit a lower portion of said rod



to pass therethrough but too small to allow a lower end of said compression spring to pass therethrough.

4,198,895

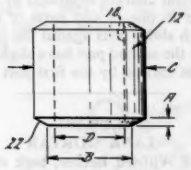
FATIGUE PERFORMANCE COLLARS AND LOCKBOLT CONSTRUCTION

John H. Ruhl, Tustin, Calif., assignor to Huck Manufacturing Company, Detroit, Mich.

Filed Mar. 24, 1978, Ser. No. 889,860

Int. Cl.[2] F16B *21/00*

U.S. Cl. 85—7 **3 Claims**



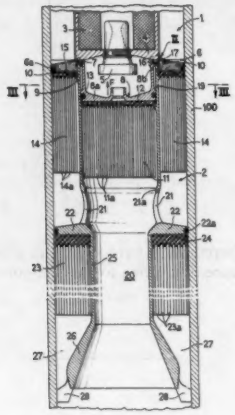
1. A fastener construction comprising a fastener pin having a head and a shank portion positioned through a work piece aperture, a collar or nut having an outer diameter C, a central opening having an internal diameter D embracing said shank with the leading surface of said collar or nut comprising a substantially flat surface having an outside diameter B and a tapered portion from said flat surface to said outer diameter C, said tapered portion having an axial height A, said leading surface bearing against the adjacent surface of the workpiece around the workpiece aperture, said collar being constructed according to the following equations:

with D representing the internal diameter of the collar opening, the maximum B dimension is substantially equal to 1.20 D, the minimum A dimension is substantially equal to 0.12 D and the the maximum C dimension of the collar is substantially equal to 1.6 D; these equations being those with the collar before swaging.

4,198,896
SELF-PROPELLED ENGINE WITH SEPARABLE STAGES

Jackie G. Lamic, Saint Medard en Jalles; Pierre B. Pascal, Lesigny; Michel E. Schilling, Epinay sur Seine, all of France, and Hubert A. Zante, Teheran, Iran, assignors to Societe Nationale des Poudres et Explosifs and Societe Luchaire, both of Paris, France

Filed Dec. 28, 1977, Ser. No. 865,025
Claims priority, application France, Dec. 28, 1976, 76 39280
Int. Cl.² F41F *3/04*
U.S. Cl. 89—1.818 **13 Claims**



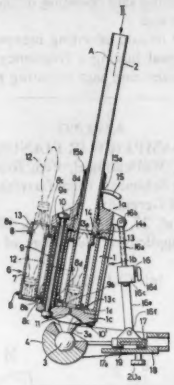
1. A self-propelled engine, such as a rocket intended to be launched from a tube, comprising a front stage and a rear accelerating stage which is provided with a front wall, means for achieving the separation of the two stages at the end of the combustion of the propellant charge contained in the acceleration stage, said propellant charge being integral with said front wall of the rear acceleration stage, wherein the front wall includes a first fixed part and a second part capable of sliding along the axis of the engine, said front wall parts each carrying respective propellant charges separated by a partition fixed in leakproof manner to one of said parts of the front wall, the second part which slides rests against the front stage, and the charge carried by the second part has a slightly longer combustion time than that carried by the first part which is fixed.

4,198,897
TANK MORTAR

Herbert Lipp, and Wilfried Becker, both of Dusseldorf, Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 5, 1978, Ser. No. 939,227
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740895
Int. Cl.² F41F *9/06*
U.S. Cl. 89—13 R **9 Claims**

1. A mortar, especially for an armored vehicle, comprising:
a base formed with a ball socket;
a gun frame comprising a head at an upper portion of said frame, a bottom at a lower portion of said frame, and beams interconnecting said head and said body, and a ball mounted on said bottom and rotatably received in said socket;
a barrel axially shiftable in said head and disposed such that the center of said ball lies substantially along said axis;
a magazine formed with a plurality of angularly spaced mutually parallel munitions chambers for respective rounds of fin-stabilized projectiles;
means including a removable axle and replaceably mounting said magazines on said frame for angular displacement about an axis offset from the axis of said barrel but parallel thereto and parallel to the respective munitions chambers whereby said chambers are successively aligned with said barrel and are disposed between said head and said bottom of said frame;

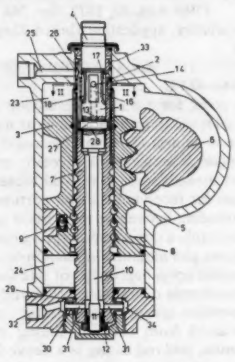


a detonator on said bottom alignable with each chamber upon the positioning thereof in alignment with said barrel to fire the respective round; and
elevation and traverse adjusting means between said base and said frame for setting the inclination and direction of said barrel.

4,198,898
SERVO STEERING GEAR

Dieter Elser, Essingen-Lauterburg, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG., Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,750
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739405
Int. Cl.² F15B *9/10*
U.S. Cl. 91—375 A **4 Claims**



1. In a power steering gear of the kind having a housing which comprises a double acting power cylinder housing a piston therein intermediate pressure chambers at respective ends of the housing including a rotary steering spindle (4); a valve means adjacent one end of said housing and comprising a valve spool (1) rotative with said steering spindle and also

including a torque rod (10) and hollow worm shaft (7) passing through said piston wherein said torque rod extends through said worm shaft and connects said worm shaft with said steering spindle; said valve means including a valve sleeve (2) in said housing rotative with said worm shaft wherein said valve spool and valve sleeve have coacting flow control channels operational to control flow to and from said cylinder chambers upon relative rotation;

the improvement including hydraulic circuitry in said housing which comprises a pressure inlet (25) at said one end of said housing adjacent the valve means and passages therefrom for inlet pressure flow to either cylinder chamber; an outlet (32) at the other end of said housing, the hollow worm shaft effecting a passage therethrough for connection only of outlet flow from said valve means to said outlet from either cylinder chamber.

4,198,899

AXIAL-PISTON MACHINE OF VARIABLE OUTPUT HAVING A SLIDE FOR DISPLAYING THE CYLINDER DRUM

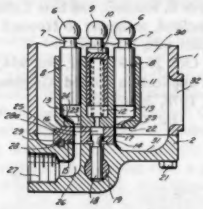
Franz Forster, Mühlbach, Fed. Rep. of Germany, assignor to Linde AG, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 26, 1977, Ser. No. 836,848

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642900

Int. Cl.² F01B *13/04*

U.S. Cl. 91—505 **3 Claims**



1. An axial-piston machine comprising a housing, a cylinder drum rotatable in said housing about an axis, a plurality of pistons reciprocatable in respective cylinders formed in said drum, means defining a reaction surface engageable by said pistons, each of said cylinders being formed on an end face of said drum with a respective port, an arcuately displaceable slide on said housing engaging said end face and entraining said cylinder drum to swing said axis, said slide being formed with an arcuate groove successively communicating with said ports, said slide covering only a portion of said end face whereby another portion corresponding to the cylinders at low pressure overhangs said slide whereby the ports of the cylinders at low pressure discharge freely into the interior of said housing, and means for displacing said slide, said housing being formed with an arcuate track having an arcuate surface juxtaposed with and slidably engaging an arcuate surface of said slide, said arcuate surface of said track being formed with a passage communicating with said groove, one of said arcuate surfaces is formed in a further groove and the other of said arcuate surfaces is formed with a projection engaging in said further groove for laterally guiding said slide.

4,198,900

METHOD OF MAKING A RECLOSEABLE, PILFER-PROOF CONTAINER

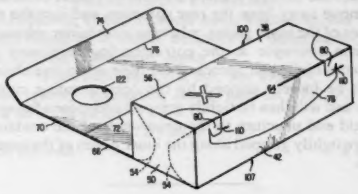
Orison W. Stone, R.F.D. #1, New Haven, Vt. 05472

Division of Ser. No. 805,174, Jun. 9, 1977, Pat. No. 4,141,449.

This application Oct. 12, 1978, Ser. No. 950,551

Int. Cl.² B31B *1/26*

U.S. Cl. 93—49 M **4 Claims**



1. A method of forming a pilfer-proof, recloseable contaner from a single paperboard blank comprising the steps of:

providing a blank for forming a closed, six-sided container base and a lid portion;

forming at least one broken cut line on the blank to define a hinged access flap in at least two adjacent sides of the container base;

folding the blank to form the closed, six-sided container base;

attaching the lid portion to a side of the container base; folding the lid portion into a lid top panel and a lid skirt panel; and,

attaching the lid skirt panel to the hinged access flap in face to face relationship so that the lid skirt panel overlies the access flap such that,

when the container is initially opened, the access flap is released along the broken cut line and participates in the opening and closing movement of the lid portion.

4,198,901

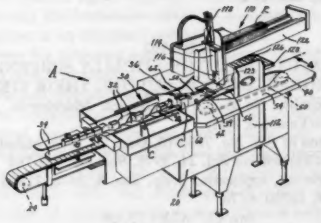
MACHINE FOR GRIPPING AND SIZING CONTAINERS FORMED FROM FLEXIBLE MATERIAL

David S. Knudsen, St. Louis, Mo., assignor to McKenna Equipment Company, Inc., Pacific, Mo.

Filed Jan. 13, 1978, Ser. No. 869,262

Int. Cl.² B31B *17/74*

U.S. Cl. 93—55.1 M **21 Claims**



17. A machine for installing a relatively rigid end structure such as a fitment ring on the open end of a container having flexible side walls which lead up to the open end, said machine comprising: a base; a main conveyor along the base for supporting a succession of containers in an upright position; front and rear sprockets on each side of the main conveyor; a captivator chain around each set of front and rear sprockets, each chain having an inner pass that passes along the main conveyor with the inner passes of the two chains having sections that are parallel; drive means for moving the main conveyor and for rotating at least one of the sprockets of each set such that the main conveyor and the two captivator chains move at substan-

tially the same velocity and the inner passes of the chains travel in the same direction as the main conveyor; and captivator blocks on the captivator chains and being positioned such that corresponding blocks on each chain come around their respective rear sprockets together and thereafter close upon each other to produce a cavity capable of snugly receiving a single container, each captivator block including a plurality of individual segments which enable the blocks to open up as they come around the rear sprockets and to thereafter close down as they move away from the rear sprockets and into the parallel sections of the inner passes, whereby a container released onto the main conveyor as the corresponding captivator blocks come around the rear sprockets for their respective chains will at first be loosely gripped by the corresponding captivator blocks and will then be tightly gripped; and means for applying the rigid end structure to the upper ends of the containers as they are tightly gripped along the inner passes of the captivator chains.

4,198,902

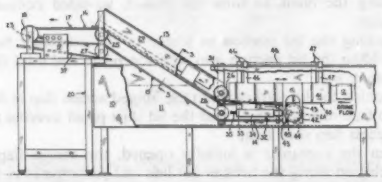
ANTIJAMMING MECHANISM FOR CONVEYOR

Donald G. Worden, Beaver Dam, Wis., assignor to Stainless Steel Fabricating, Inc., Columbus, Wis.

Filed Apr. 11, 1978, Ser. No. 895,330

Int. Cl.² A01J *25/08*

U.S. Cl. 99—535 **9 Claims**



5. A cheese conveyor for automatically removing cheeses floating in a brine solution includes a generally horizontal conveyor section and an integral upwardly inclined conveyor section being adapted to be positioned below the surface of the brine solution so that cheeses will be carried by the flow of liquid to the inclined section which lifts them out of the brine, said conveyor further including movable stepped walls located on either side of the horizontal section which are adapted to move back and forth 180° out of phase with one another so as to gently bump and align the cheeses and prevent them from jamming the conveyor.

4,198,903

APPARATUS FOR AUTOMATICALLY SCREENING MUSHROOMS AND FOR CUTTING THEIR STEMS

Antonio Turatti, No.26/B,Viale Regina Margherita 30014, Cavarzere(Venezia), Italy

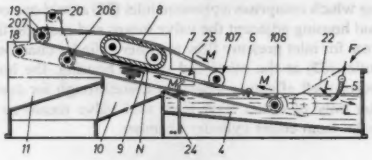
Continuation of Ser. No. 755,610, Dec. 29, 1976, abandoned. This application Jul. 31, 1978, Ser. No. 929,784

Claims priority, application Italy, Jan. 8, 1976, 12406 A/76; Sep. 3, 1976, 12780 A/76

Int. Cl.² A23N *15/04*

U.S. Cl. 99—642 **10 Claims**

1. A machine for automatically screening mushrooms and cutting their stems employing seizing and conveying means for handling prescreened mushrooms, said machine being defined by: a loading chamber basin disposed in proximity to said seizing and conveying means, said seizing and conveying means being formed to seize previously screened mushrooms and sequentially move the mushrooms to a collecting basin; said seizing and conveying means being defined by two tracks of elastic belts movable along a closed circuit (arrow M) between reversal points and on inclined planes, a first of said tracks being the seizing and conveying track having its lower run reversal point located for receiving the mushroom immersed in water while, another reversal point being at a higher level and axially projecting beyond the limit of the basin disposed over the collecting basin, said other track being oriented on a plane slightly divergent with respect to the plane of the conveyor track, said other track having its lower reversal point disposed in a plane which at a certain point of its closed circuit intersects (N), the plane of the conveyor track, first screening



of the mushrooms being effected by a portion of the belts forming the two tracks; cooperating cutting means for cutting the mushrooms; a storage chamber downstream of said cutting means for recovering the cut mushrooms; collecting chamber for collecting the discarded parts resultant from the mushroom cutting operation; and monitoring means for monitoring the conveyance of mushrooms into a correct position for cutting the mushrooms at the end of their respective stems.

4,198,904

BALING MACHINE

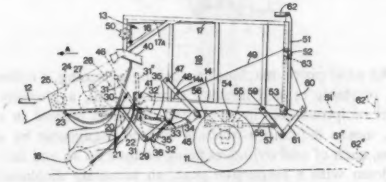
Daniel Cheale; Bryce E. Randall, and Eric T. Martin, all of Bury St. Edmunds, England, assignors to Howard Machinery Limited, Bury St. Edmunds, England

Filed Oct. 25, 1978, Ser. No. 954,765

Claims priority, application United Kingdom, Oct. 29, 1977, 45131/77; Jul. 19, 1978, 30369/78

Int. Cl.² B30B *9/30*

U.S. Cl. 100—45 **10 Claims**



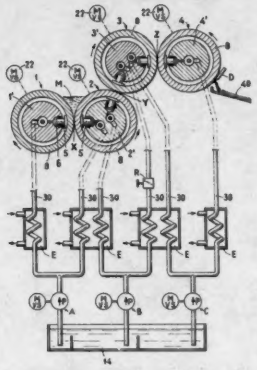
1. A baling machine comprising a frame defining a bale chamber in which bales are to be formed, an entry opening at one end of the bale chamber, feed means for feeding material to be baled through the entry opening and for compressing the material during feeding, guide means locatable in the bale chamber adjacent the entry opening for constraining the material entering the chamber to pass along a wall of the chamber at said one end to form successive columns of the material, and drive means for moving the guide means in and out of the bale chamber so that when the guide means is positioned out of the bale chamber a column of material which lies against said wall can move towards the opposite end of the chamber, and upon re-entry of the guide means into the chamber the guide means is positioned between said wall and said column of material.

4,198,905

CALENDER COMPOSED OF CONTROLLED DEFLECTION ROLLS

Rolf Lehmann, Rudolfstetten, Switzerland, assignor to Escher Wyss Aktiengesellschaft, Zürich, Switzerland

Filed Feb. 9, 1979, Ser. No. 10,920
Claims priority, application Switzerland, Mar. 1, 1978, 2197/78
Int. Cl.[2] B30B *3/04;* B21B *13/02*
U.S. Cl. 100—162 B 8 Claims



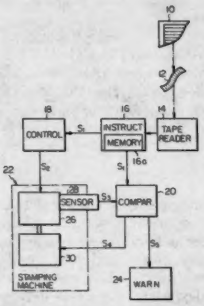
1. A calender comprising:
a plurality of controlled deflection rolls;
each of said controlled deflection rolls comprising:
a stationary support;
a rotatable roll shell having an inner surface and mounted to be rotatable about said stationary support;
a plurality of piston-like hydrostatic support elements located between the roll shell and said support;
means defining a pressure chamber means for said support elements;
means for infeeding a pressurized fluid medium to the hydrostatic support elements which, under the action of the hydrostatic pressure which is effective in said pressure chamber means, are pressed against the inner surface of the roll shell of the related controlled deflection roll;
said plurality of controlled deflection rolls defining coacting neighboring controlled deflection rolls forming between each two neighboring coacting rolls a pressure gap;
the support elements of each coacting two neighboring controlled deflection rolls to both sides of the formed pressure gap being connected with a common source for the pressurized fluid medium and having independently adjustable pressure;
said common pressurized fluid medium source constituting at least part of said means for infeeding the pressurized fluid medium to the controlled deflection rolls;
said plurality of controlled deflection rolls including an arrangement of two coacting neighboring controlled deflection rolls forming a pressure gap and located at the same height;
said means for infeeding said pressurized fluid medium including infeed lines for the support elements of said two controlled deflection rolls at the same height;
said infeed lines carrying essentially the same pressure of the pressurized fluid medium;
said plurality of controlled deflection rolls including two controlled deflection rolls arranged at different elevational positions;
said means for infeeding the pressurized fluid medium comprising infeed lines for the controlled deflection rolls at elevationally different positions;
the infeed line of the highest situated controlled deflection roll being provided with pressure regulator means for forming a pressure which is lower by essentially a constant pressure differential and for compensating the effect of the inherent weight of the roll shells of the controlled deflection rolls forming the pressure gap of such controlled deflection rolls at elevationally different positions.

4,198,906

CODE IMPRINTING SYSTEM HAVING ERROR PRECLUSION FUNCTION

Tsuneo Fujikawa, Ebina; Syunichi Aoki, Yokohama, and Naoki Sasaki, Zama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 28, 1978, Ser. No. 890,979
Claims priority, application Japan, Apr. 28, 1977, 52-49390; Apr. 28, 1977, 52-49389
Int. Cl.[2] B41F *17/00*
U.S. Cl. 101—42 8 Claims



1. A system for imprinting identification code on individuals of automobiles of various types or models being assembled on one assembly line in an order specified in a production program, the system comprising:
a control unit to produce an electrical data signal representing an identification code specified in the production program;
a control unit to produce an electrical control signal representing the identification code based on said data signal;
an automated stamping machine having a type-setting mechanism which sets up imprinting types into an arrangement corresponding to the identification code in response to said control signal supplied from said control unit and a driving mechanism to carry out a stamping action in response to an electrical operation signal;
a sensor for detecting actual arrangement of said imprinting types and producing an electrical signal representing the detected type arrangement;
a first comparator which compares the type arrangement signal supplied from said sensor with said data signal supplied from said instruction unit and produces a first correctness signal only when the compared signals agree with each other but produces a warning signal if the compared signals do not agree with each other;
a sensor for detecting the type or model of a car body on which the identification code is to be imprinted and producing an electrical car model signal representing the detecting car model;
a second comparator which compares said car model signal with a car model component of said data signal supplied from said instruction unit and produces a second correctness signal only when the compared signals agree with each other but produces a warning signal if the compared signals do not agree with each other; and
a judgement unit which provides said operation signal to said stamping machine only when both said first and sec-

ond correctness signals are supplied thereto at a predetermined moment.

4,198,907

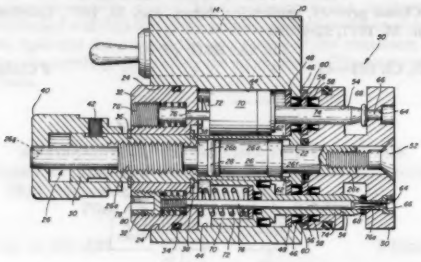
SPRAY DAMPENING SYSTEM FOR OFFSET PRINTING WITH PAGE CONTROL ASSEMBLY

Thomas G. Switall, Chicago, Ill., assignor to Ryco Graphic Manufacturing Inc., Chicago, Ill.

Continuation of Ser. No. 794,257, May 5, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,107

Int. Cl.[2] B41F 7/30; B41L 25/06

U.S. Cl. 101—147 13 Claims



1. In a spray dampening system for delivery of a dampening fluid to a printing press; a plurality of spray nozzles; fluid delivery means for delivering dampening fluid to said nozzles, said fluid delivery means including fluid regulating means comprising a plurality of valves each associated with at least one of said nozzles, each of the said valves including a valve member movable toward and away from its closed position to open and close each valve, each of said valve members carrying a piston, valve operating means for selectively moving each of said valve members toward and away from its closed position, said valve operating means including a resilient member urging each of said valve members toward its closed position and means for selectively directing air under pressure against said valve member pistons to effect movement of said valve member away from their closed position against the resistance of said resillient member, and adjustable valve restriction means for restricting the fluid passage through said valve when said valve is open and selectively movable to adjust the degree of restriction of the fluid passage through said valve, whereby the flow of dampening fluid through each valve to the associated nozzle may be regulated.

4,198,908

DRIVE FOR AN INK SUPPLYING DEVICE OF A ROTARY PRINTING PRESS

Heinz Skiera, Leipzig, German Democratic Rep., assignor to VEB Polygraph Druckmaschinenwerke Leipzig, Leipzig, German Democratic Rep.

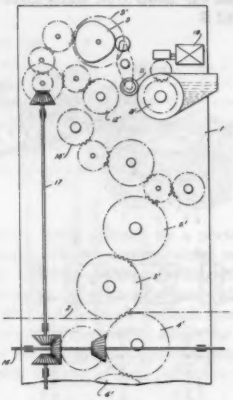
Continuation-in-part of Ser. No. 885,814, Mar. 13, 1978, abandoned. This application Apr. 10, 1978, Ser. No. 894,847

Claims priority, application German Democratic Rep., Mar. 11, 1977, 197794

Int. Cl.[2] B41F 13/00, 13/10, 13/14

U.S. Cl. 101—217 9 Claims

1. In a rotary printing press, a combination comprising a support; means for printing images on an advancing web, including at least one plate cylinder mounted on said support for rotation and at least one blanket cylinder rotatably mounted on said support intermediate and in contact with said plate cylinder and with the advancing web; means for supplying printing ink to said plate cylinder, including an ink supply fountain, an ink supply roll thereat, a succession of alternately arranged distributing and transfer rollers mounted on said support for rotation in contact with one another; application rollers arranged between at least one distributing roller at one end of said succession and said plate cylinder, and means for periodically delivering the ink from said ink supply roll to another distributing roller at the other end of said succession, including a ductor roll mounted on said support for rotation and for displacement between a replenishing and a delivering position in contact with said ink supply roll and with said another distributing roller, respectively; and means for driving



said printing and supplying means, including a main driving shaft and a first gear transmission that drives directly from said main driving shaft said distributing rollers except said another distributing roller and an additional driving shaft and a second gear transmission that drives said another distributing roller so that the remaining rollers are unaffected when said another distributing roller is subjected to a jolt upon contact with said ductor roll in said delivering position.

4,198,909

TRACK BRAKE FOR RAILWAYS

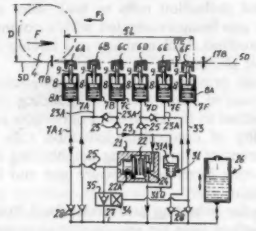
Jean Plantureux, Paris, France, assignor to Faiveley S.A., Seine-Saint-Denis, France, a part interest

Filed Dec. 6, 1977, Ser. No. 858,083

Claims priority, application France, Dec. 16, 1976, 76 37900; Nov. 17, 1977, 77 34629

Int. Cl.[2] B61K 7/02; B61B 1/00

U.S. Cl. 104—26 A 8 Claims



1. A railway track brake for limiting the speed of rolling motion of a freight car on an inclined shunting track, said track brake comprising retarding means installed in the service position along a braking rail of the track, the retarding means comprising a number of braking modules each comprising a braking tappet having in the rest position a portion which projects above the level of the top face of the braking rail in order to be successively applied beneath each car wheel, said tappet being connected to a piston-rod of a piston of a hydraulic brake cylinder by means of a motion transmission rocker

having a pivot-pin connected to the braking rail, a restoring spring within said piston for urging said tappet toward the rest position thereof, a first end of said rocker acting against said braking tappet and a second end of said rocker acting against said piston rod in a direction transverse to the braking rail, said hydraulic brake cylinder being substantially horizontal, said rocker having on each said end thereof a cup receiving a substantially hemispherical face of a half-ball joint component which is concentric with said cup, a substantially equatorial flat on said half-ball joint component projecting from said cup and bearing respectively against a corresponding flat face of said braking tappet and against a flat face of the associated extremity of said piston-rod of said horizontal hydraulic cylinder.

6. A railway track brake for limiting the speed of rolling motion of a freight car on an inclined shunting track, comprising at least one braking tappet and a hydraulic brake cylinder which is caused to operate by throttling of a fluid, and means for adjusting said throttling on demand according to the weight carried by each car, the adjusting means comprising a brake-application regulator having a throttling piston subjected to the action of an opposing spring controlled by a wheel-weighing tappet, said weighing tappet being disposed before the first braking tappet in the intended direction of travel of the car to be braked, said regulator being mounted in a hydraulic circuit for discharge from brake cylinders each acting against one of the braking tappets in order to adjust the throttling action of the fluid of each cylinder according to the weight of each wheel as measured by said weighing tappet, a weighing hydraulic cylinder fitted with a piston and with a piston-rod connected to the weighing tappet to control the brake application regulator, said weighing tappet and said weighing hydraulic cylinder being respectively interchangeable with the braking tappets and with the braking hydraulic cylinders.

4,198,910

MAGNET SUSPENSION RAILWAY VEHICLE

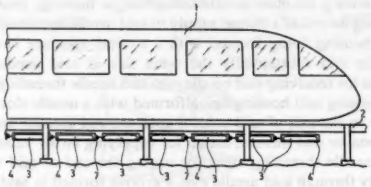
Eveline Gottzein, Oberpframmern; Friedrich Ossenberg-Franzes, Brunnthal, and Christian Roche, Münich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Münich, Fed. Rep. of Germany

Filed Jun. 2, 1977, Ser. No. 802,876

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626440

Int. Cl.[2] **B60G** *25/00;* **B61B** *13/08;* **B61D** *3/00, 11/00*

U.S. Cl. 104—281 **9 Claims**



1. A magnetic suspension vehicle for movement relative to a rail arrangement, comprising a vehicle body, a plurality of magnet means elastically mounted on the body for assuming positions spaced from the rail arrangement by given finite distances when energized, said magnet means being serially arranged in a row along the body, said magnet means being individually flexibly mounted on the body, universal coupling means connecting said magnet means to each other along the row to reciprocally adjust the movement of the magnet means relative to the rail arrangement so that when force variations cause one end of one magnet means to deviate from the given finite distances between the magnet means and the rail arrangement by approaching the rail arrangement too closely and conversely by departing too far therefrom, the one end of one magnet tends to draw an adjacent end of the serially adjacent magnet in the same direction and is drawn by the end of the serially adjacent magnet in the other direction.

4,198,911

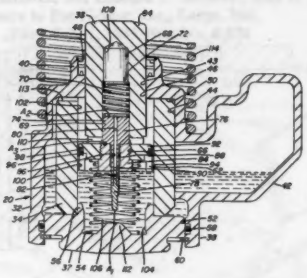
SNUBBER

Donald Wiebe, Sewickley, Pa., assignor to A. Stucki Company, Pittsburgh, Pa.

Filed May 15, 1978, Ser. No. 906,053

Int. Cl.[2] **B61B** *5/12;* **F16F** *9/06, 9/34*

U.S. Cl. 105—197 DH **9 Claims**



1. A hydraulic snubber device adapted to be disposed within a spring group of a railway truck assembly comprising: a housing; a piston member axially reciprocable within said housing and defining axially spaced upper and lower variable volume hydraulic fluid chamber portions within said housing; elongated valve means cooperable with said piston member and having a portion thereof reciprocable along an axis extending in the same direction as the direction of reciprocation of said piston member to cause said valve means to be operable in first and second operational modes; in said first operational mode said valve means providing a larger degree of hydraulic communication between said chamber portions than in said second operational mode; and said valve means being independently reciprocable from operation in said first operational mode to operation in said second operational mode by response to hydraulic fluid pressure within one of said chamber portions and also by mechanical response to the axial position of said piston member.

4,198,912

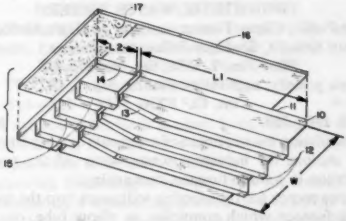
SLIP SHEET PALLET WITH REUSABLE PORTION

Jurgen Gramckow, 4096 Faria Rd., Ventura, Calif. 93001

Filed Oct. 16, 1978, Ser. No. 951,657

Int. Cl.[2] **B65D** *19/00, 19/40*

U.S. Cl. 108—51.1 **4 Claims**



1. A pallet comprising a reusable portion and adjacent expendable portion; and a slip sheet secured to the expendable portion and overlying the reusable portion, said reusable portion and expendable portion having bottom support skids in

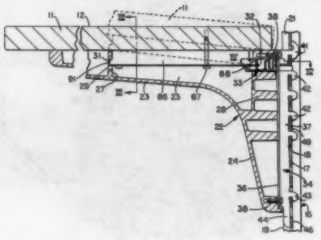
alignment so that a fork lift can be received under both said reusable portion and expendable portion for lifting a stack of items on said slip sheet.

4,198,913

COMPONENT LOCKING DEVICE

Richard G. Haworth, Holland, and Ronald D. Ten Elshof, Grandville, both of Mich., assignors to Haworth Mfg., Inc., Holland, Mich.

Filed May 26, 1978, Ser. No. 909,968
Int. Cl.[2] A47B 9/00; F16M 13/02
U.S. Cl. 108—108 **12 Claims**



1. In combination, an upright wall structure defining a pair of horizontally spaced uprights each having a wall with a vertically extending row of elongated slots therein, a pair of substantially L-shaped supports adapted for releasable securement to said uprights, each of said supports including rearwardly and downwardly projecting hook means positioned for engagement with the slotted wall of the respective upright, and a shelflike article positioned on and releasably attached to said supports, whereby said article is positioned adjacent and projects horizontally outwardly from said wall structure in cantilevered relationship thereto, the improvement comprising latch means mounted on said support and cooperating with said slotted upright for positively locking said support to said upright, said latch means including a latch member movably supported on said support and movable relative thereto into a latching position wherein it projects into one of the slots of said upright for preventing upward displacement of said support relative to said upright, said latch means also including spring means urging said latch member into a released position out of engagement with said upright even when said support is mounted on said upright, and actuating means mounted on said article and disposed for engagement with said latch means to move the latch member into said latching position when said article is attached to said supports.

4,198,914

INSTALLATION FOR TREATMENT OF SEDIMENTS COMING FROM STATIONS FOR PURIFICATION OF INDUSTRIAL WASTE WATER

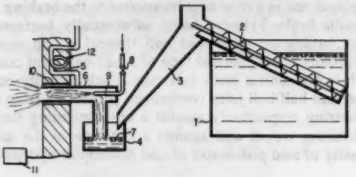
Michel Petiot, Cleon, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 7, 1978, Ser. No. 913,345
Claims priority, application France, Sep. 6, 1977, 77 17636
Int. Cl.[2] F23G 5/12
U.S. Cl. 110—238 **5 Claims**

1. Installation for treatment of sediments coming from purification stations for industrial waste water of the type with incineration in a static furnace, comprising:

injector means for transferring sediments into the incinerating furnace which comprises an elbow tube, one end of which opens into the surface of the sediments to be incinerated and the other opens into the interior of the furnace; and

a blast pipe admitting air under pressure and passing in an airtight manner through a wall of the injector means disposed in a horizontal arm of the latter so as to deliver air under pressure in the direction of the furnace, thus



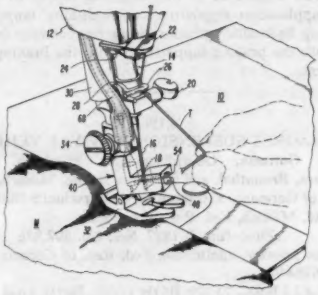
creating a vacuum in the injector which permits aspiration of the sediments.

4,198,915

VACUUM-TYPE PNEUMATIC NEEDLE THREADING ASSIST

Wesley R. Peterson, Bound Brook; Robert Sedlatschek, Bridgewater; James A. Transue, Union, and Peter J. Totino, North Bergen, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Oct. 5, 1978, Ser. No. 948,930
Int. Cl.[2] D05B 87/00
U.S. Cl. 112—225 **2 Claims**



1. A pneumatic needle threading assist for threading an eye in a sewing machine needle comprising a housing, means for guiding an end of a thread supply to said needle eye comprising said housing being formed with a conical aperture having a smaller end substantially the same size as said needle eye, means for receiving said needle into said needle threading assist comprising said housing being formed with a needle slot transverse to the axis of said conical aperture and located opposite the smaller end thereof, means for supplying an air vacuum to said needle threading assist for urging the end of said thread supply through said needle eye, a groove formed in said housing intersecting said conical aperture along the entire length thereof whereby after thread has passed through said needle eye, said needle threading assist may be removed from the thread, and said housing being formed with a cylindrical thread chamber located at the opposite side of said needle slot from said conical aperture for collecting a quantity of said thread supply having passed through said needle eye, in advance of said air vacuum supplying means, whereby said thread will not collect in said vacuum supplying means, said cylindrical thread chamber having an axis substantially perpendicular to the axis of said conical aperture, and a thread orifice tangentially intersecting said thread chamber and entering said needle slot, said thread orifice being coaxial with said conical aperture and having a size substantially the same as the smaller end of said conical aperture.

4,198,916

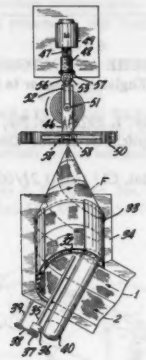
PROCESS AND APPARATUS FOR MAKING GARMENTS FORMED OF HELICALLY JOINED PIECES

Harry R. dePolo, 480 Park Ave., New York, N.Y. 10022

Continuation-in-part of Ser. No. 770,034, Feb. 18, 1977, Pat. No. 4,097,933. This application Jul. 3, 1978, Ser. No. 921,181

Int. Cl.[2] D05B *1/00*

U.S. Cl. 112—63 25 Claims



1. A process of making garments formed of helically joined pieces, which comprises feeding from a supply roll a continuous strip of garment material, propelling said strip helically around a cylindrical form with edges of adjacent convolutions of said material contiguous with one another while joining said contiguous edges of adjacent convolutions of said material to form a tubular structure, and cutting said material in predetermined manner into garment lengths and to provide any openings required in said garments.

4,198,917

ICE-BREAKING MEANS FOR SHIPS

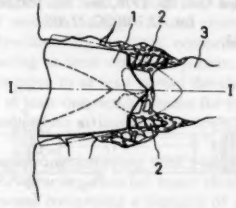
Masanao Oshima; Mikihisa Komoto; Shoichi Yabuki, and Tsuneo Inokawa, all of Tokyo, Japan, assignors to Mitsui Engineering and Shipbuilding Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1977, Ser. No. 823,396

Claims priority, application Japan, Aug. 9, 1976, 51-94684; Aug. 9, 1976, 51-94685

Int. Cl.[2] B63B *35/08*

U.S. Cl. 114—42 4 Claims



1. An ice-breaking device for a ship comprising at least a pair of ice-breaking means, each having a screw body, in the form of a rotatable cone, supported only at the base thereof, provided with a peripheral spiral blade extending to the tip thereof, wherein said screw bodies, with said spiral blades thereon, are positioned such that they extend beyond the periphery of the bow portion of the ship with the axes of the screw bodies being in parallel with, and spaced from, the central axis line of said ship, at the respective sides of said central axis line, said ice-breaking means forming grooves in a mass of ice by the rotation of the screw bodies on the mass of ice, and driving means for driving said ice-breaking means independently of each other in the same or opposite directions of rotation, wherein a portion of the mass of ice between the grooves formed therein is bent and broken by the force applied thereto by said ice-breaking means and said bow, said portion of ice being forced beneath the bow portion of said ship.

4,198,918

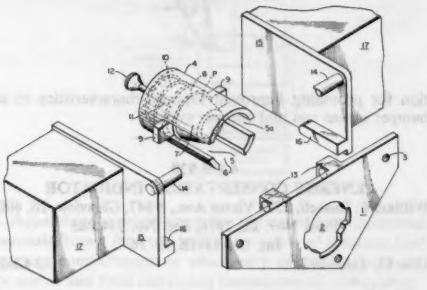
SEMI-AUTOMATIC BAILER PLUG

William C. Patriarca, and Leonard J. McGraw, both of Largo, Md., assignors to Pat-N-Mac, Inc., Largo, Md.

Filed Feb. 1, 1979, Ser. No. 8,576

Int. Cl.[2] B63B *13/00*

U.S. Cl. 114—197 2 Claims



1. A bailer plug control assembly for boat transoms having a bail hole for discharge of bilge water from a boat comprising, in combination, a mounting plate with a bail opening for alignment with a boat transom bail hole, a bail plug and a spring, said plug being spring-loaded when spaced from the boat transom bail hole, a bail plug housing formed with guide members associated with said mounting plate bail opening in registry with the bail hole of said boat transom, said plate including spaced hinge connections, spaced float means having hinge plates with pivot extensions engaged in said hinge connections, whereby said floats swing upward in reaction to water pressure around the boat when launched to project said spring-loaded bail plug into said boat transom bail hole, and manual means to remove said bail plug from the boat transom bail hole to bail out the boat after the boat is raised from the water.

4,198,919

BUMPER PROTECTION DEVICE

Orde R. Evans; William D. Rhodes, and Joseph O. Trahan, all of Lafayette, La., assignors to Oreco III, Inc., Lafayette, La.

Filed Jun. 2, 1978, Ser. No. 911,910

Int. Cl.[2] B63B *59/02*

U.S. Cl. 114—219 8 Claims

6. The method as set forth in claim 5, including the steps of:

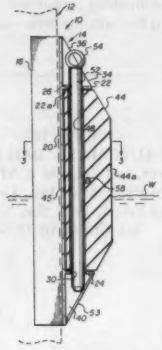
(a) withdrawing the pins from the frame to disconnect the bumper when it becomes damaged;

(b) removing the damaged bumper from the frame;

(c) positioning a connecting portion of a different bumper upon the guide pin positioned within the space formed in the frame; and

(d) inserting pins through the holes in the first and second cross members and holes in the connecting portion of the different bumper to connect the different bumper to the mount frame which replaces the damaged bumper.

8. The device as set forth in claim 7, wherein the longitudinal axes of said frame and said guide means are in vertical orientation for providing improved support characteristics to said bumper means and said bumper system.



4,198,920

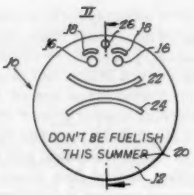
ENERGY CONSERVATION INDICATOR

William F. Russell, 2575 Victor Ave., #647, Glenview, Ill. 60025

Filed Nov. 22, 1976, Ser. No. 744,285

Int. Cl.² G01K *11/16*

U.S. Cl. 116—202 **2 Claims**



1. An energy conservation indicator for use in an enclosed locality adapted to be heated and/or cooled to temperatures bounded by limits recommended for energy conservation purposes, comprising a pair of thin discs of transparent material having a backing of dark color provided with contrastingly colored printed matter and images of parts of a human face, such as eyes and eyebrows;

a. each of said discs having between itself and its backing a first and a second configuration or encapsulated liquid temperature-sensitive crystals representing separate mouths on the face and forming a downwardly arced curve and an upwardly arced curve, respectively;

b. the crystals in said first configuration on one disc being of such a nature as to reflect incident white light and thereby give a smiling countenance to the face at temperatures below the recommended upper temperature for heating;

c. the crystals in said second configuration on said one disc being of such a nature as to reflect incident white light and thereby give a frowning countenance to the face at temperatures above the recommended upper temperature for heating;

d. the crystals in said first configuration on the other disc being of such a nature as to reflect incident white light and thereby giving a smiling countenance to the face at temperatures above the recommended lower temperature for cooling; and

e. the crystals in said second configuration on said other disc being of such a nature as to reflect incident white light and thereby give a frowning countenance to the face at temperatures below the recommended lower temperature for cooling;

f. said two discs being joined back to back, whereby the unit thus formed may be used during the heating season (winter) as well as during the cooling season (summer) by suspending the unit to expose one side or the other to view.

4,198,921

FLUID PRESSURE ACTUATORS INDICATOR

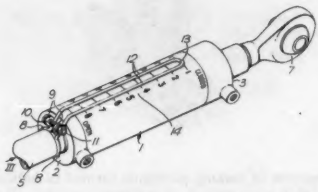
Roy Horton, Exeter, England, assignor to Sparex Ltd. of Exeter Airport, England

Filed Nov. 1, 1978, Ser. No. 956,789

Claims priority, application United Kingdom, Feb. 15, 1978, 5979/78

Int. Cl.² G01D *21/00*

U.S. Cl. 116—283 **2 Claims**



1. A position marker device for indicating the position of a piston in a cylinder of an actuator, said actuator having a piston rod projecting from the cylinder, the device comprising a collar portion adapted to be fitted to the piston rod externally of the cylinder and an arm formed integrally with the collar portion, both said collar portion and said arm being made of resilient wire and said arm, in use of the device with the collar portion fitted to the piston rod, extending generally parallel to the longitudinal axis of the cylinder externally thereof to act as an indicator of the position of the piston in the cylinder.

4,198,922

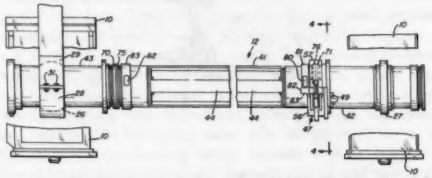
GAS BARRIER COATING CONTROL APPARATUS WITH A READILY REPLACEABLE GAS ORIFICE HEADER SEGMENT

Charles W. Gwilt, Oakley, Calif., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 10, 1978, Ser. No. 950,509

Int. Cl.² B05C *11/06*

U.S. Cl. 118—63 **3 Claims**



1. In a gas barrier coating control apparatus for a strip coating line, said apparatus including an elongated header having an axial bore therethrough and a gas orifice communicating with said bore, a source for supplying gas to each end of said header, and a frame for supporting said header in position in the coating line for properly controlling the coating on the strip, the improvement in said apparatus which comprises:

(a) said header comprising abutting length segments including a pair of conduit segments secured to the frame in fixed position spaced from each other and an intermediate

gas orifice segment located therebetween mating in end-to-end relationship with each of said conduit segments; and

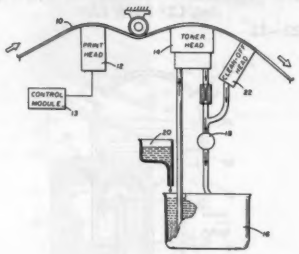
(b) a readily releaseable connecting means attached to each conduit segment for fastening the adjacent end of said intermediate segment thereto in gas tight relationship, including means for supporting said intermediate segment when the connecting means are unfastened, said connecting means permitting replacement of the intermediate segment without removing the frame from the coating line.

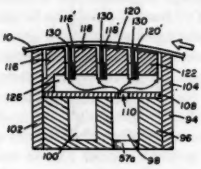
4,198,923

TONING APPARATUS FOR ELECTROSTATIC PRINTING AND PLOTTING MACHINES

John Blumenthal, Wickliffe, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 8, 1978, Ser. No. 903,855
Int. Cl.² G03G *15/10*
U.S. Cl. 118—660 **7 Claims**





1. An improved toner head for applying liquid toner to a moving record medium having a latent electrostatic image thereon to be developed by the toner, comprising:

a housing having at least one inlet plenum for receiving liquid toner prior to at least partial development of said image and at least one outlet plenum for receiving liquid toner subsequent to at least partial development of said image;

manifold means communicating with said inlet and outlet plenums for directing flow of toner therebetween, said manifold means comprising a plurality of elongated, toning channels opening outwardly relative to said plenums;

a plurality of flow passages for directing liquid toner from said inlet plenum across the width of each of said elongated, toning channels and back to said outlet plenum; and

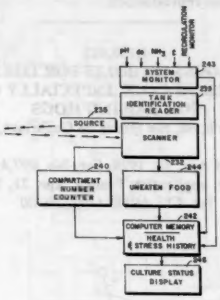
a plurality of outwardly extending elongated wear elements, between said elongated, toning channels, said wear elements each having an outer edge, said outer edges together comprising a portion of the geometrical elements of a cylindrical surface over which a record medium is drawn during toning, said cylindrical surface thereby ensuring proper sealing contact of the record medium with said outer edges whereby toner flow across said elongated, toning channels is facilitated when a vacuum is applied to said outlet plenum.

4,198,924

AQUACULTURE REARING SYSTEM

Paul W. Chapman, Derry, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jun. 26, 1978, Ser. No. 918,886
Int. Cl.² A01K *61/00*
U.S. Cl. 119—2 **4 Claims**



1. Apparatus for determining the amount of food consumed by animals from a feed rod having a number of identical food conveying compartments in which each animal has access to only one of said food conveying compartments, comprising:

means for identifying the compartments;

means for periodically ascertaining the amount of uneaten food in said identifiable compartments; and

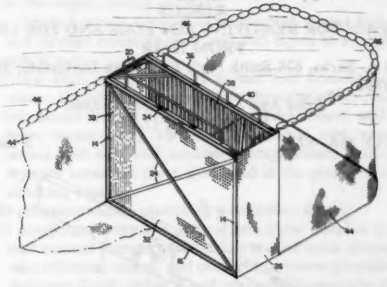
means for storing an indication of the amount of uneaten food in a particular compartment, thereby to identify the daily consumption of food over a given time period.

4,198,925

GRADING SMALL LIVE FISH UNDERWATER

Jon M. Lindbergh, Bainbridge Island, Wash., assignor to Domsea Farms, Inc., New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,963
Int. Cl.² A01K *61/00*
U.S. Cl. 119—3 **4 Claims**



1. A fish sorting cage comprising a rectangular frame having a closed bottom, closed ends, two open opposing sides, and a removable side panel for each said side, with grooves on the edges of said two opposing sides adapted to receive removable panels, at least one of said side panels comprising a plurality of parallel bars of predetermined spacing and having a net affixed to the edges of said barred panel.

4,198,926

METHOD TO INDUCE SPAWNING IN SHELLFISH

Daniel E. Morse, Santa Barbara, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 6, 1978, Ser. No. 893,881
Int. Cl.[2] A01K *61/00*
U.S. Cl. 119—4 19 Claims

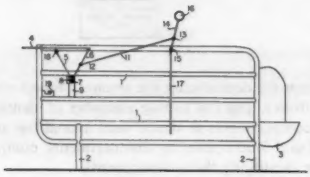
1. A method to induce and control spawning and reproduction in shellfish in seawater, which comprises adding to the seawater a sufficient concentration of an oxidizing agent which yields electronically activated oxygen, under conditions of alkalinity of the seawater and temperature thereof to induce said spawning and reproduction.

4,198,927

AUTOMATIC LOCKS OR BOLTS FOR THE DOOR OF AN ANIMAL-RAISING CAGE, ESPECIALLY OF A CAGE FOR RAISING HOGS

Etienne Guiavarc'h, 55, rue Herve de Guebriant, 29207 Landerneau, France

Filed Apr. 18, 1978, Ser. No. 897,413
Claims priority, application France, Apr. 21, 1977, 77 12654
Int. Cl.[2] A01K *1/02, 29/00*
U.S. Cl. 119—27 10 Claims



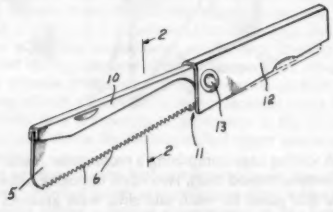
1. An automatic lock or bolt for the door of an animal-raising cage, with means for automatically opening and closing a door system, said cage comprising a door mounted on and pivoting around a shaft, said door descending to a vertical position in closing, or rising to a horizontal position in opening, link means extending between said door and said opening means for limiting the positions of said door; and means for positively locking the door responsive to a closing of the door, and means for precluding an unlocking of said positively locked door except by applying a horizontal push on the door, said push being from the inside toward the outside of the cage.

4,198,928

COMBS FOR REMOVING BOT EGGS AND THE LIKE FROM HAIR

Paul A. Borba, 626 Smith Neck Rd., South Dartmouth, Mass. 02748

Filed Apr. 3, 1978, Ser. No. 893,060
Int. Cl.[2] A01K *13/00*
U.S. Cl. 119—92 3 Claims



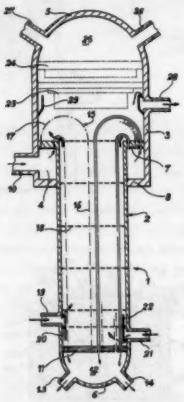
1. A comb for use in removing bot fly eggs from horse hair shafts, said comb including a blade of steel stock the thickness of which is in the approximate range of 0.003 to 0.008 of an inch, said blade provided with a series of teeth along one edge thereof, the stock thickness such that said teeth can be formed by photo-etching, and stiffening means secured to said blade to prevent unwanted flexing, said teeth being of an arrowhead shape with the junction between each two teeth defining a major arc and dimensioned freely to receive at least one horse hair shaft, the thickness of the blade stock establishing the margins of the teeth and of their junctions as edges that are sufficiently sharp to ensure the scraping of bot eggs from the shafts during use of the comb, the length of each tooth being so related to its width as to be substantially inflexible during use.

4,198,929

STEAM GENERATOR FOR A PRESSURIZED-WATER POWER STATION

Jean Forestier, Montrouge; Bernard Leblanc; Marcel Monteil, both of Paris, and Pierre Monteil, Esvres, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 22, 1978, Ser. No. 945,208
Claims priority, application France, Sep. 28, 1977, 77 29149
Int. Cl.[2] F22B *1/06*
U.S. Cl. 122—32 4 Claims



1. A steam generator for a pressurized-water power station, wherein said generator comprises in combination an outer casing formed by two cylindrical shells having different diameters but a common vertical axis and consisting respectively of an inner shell and an outer shell which are closed by end-walls at the opposite extremities thereof and engaged one inside the other over a predetermined distance in a direction parallel to the axis aforesaid, a horizontal annular tube plate disposed between the upper end of the inner shell and the outer shell, said annular plate being such as to delimit with the cylindrical shells and a parallel partition-wall an annular header which serves to admit pressurized primary water and the height of which is equal to the distance of engagement, a central tube plate mounted in the inner shell near the bottom end-wall so as to delimit with said end-wall an outlet header for the discharge of primary water, a bundle of tubes which are parallel along the greater part of their length and through which the primary water is circulated, each tube aforesaid being adapted to extend vertically from the central tube plate and to have a crook-shaped end portion having a downwardly-directed concavity for connecting each tube to the annular tube plate, said tubes being uniformly connected over the entire annular tube plate, ducts which serve to admit the secondary water to be vaporized into the casing and which are formed in the inner shell in the vicinity of the central tube plate, and outlet ducts which

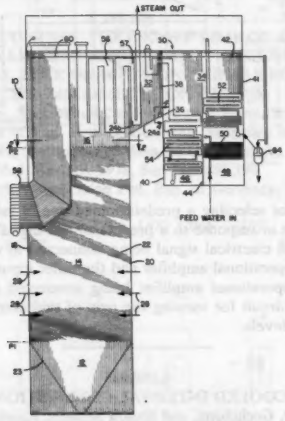
serve to discharge the steam produced and which are formed in the outer shell or in the end-wall of said shell.

4,198,930

GAS SCREEN ARRANGEMENT FOR A VAPOR GENERATOR

Harry H. Pratt, West Orange, N.J., and David Cranstoun, Spring Valley, N.Y., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed May 9, 1978, Ser. No. 904,361
Int. Cl.[2] F22B *15/00*
U.S. Cl. 122—235 C **14 Claims**



1. A vapor generator comprising an upright furnace section the boundary walls of which are formed by a plurality of tubes and means for passing fluid through said tubes to apply heat to said fluid, a plurality of headers, each connected to the upper portions of a plurality of tubes forming one of said boundary walls, one portion of said tubes forming said one of said boundary walls being bent out of the plane of said one wall and away from the furnace section for connection to said headers and the remaining portion of said tubes extending upwardly for the height of said furnace section, and a single additional tube extending upwardly from each of said headers in fluid communication with said one portion of tubes connected to said header, said single additional tubes being disposed in a spaced relationship to form a screen for the passage of combustion gases from said furnace section.

4,198,931

DIESEL FUEL

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 1, 1979, Ser. No. 8,752
Int. Cl.[2] C10L *1/18, 1/22*
U.S. Cl. 123—1 A **41 Claims**

1. As a new composition of matter, an anti-wear compression ignition fuel for use in diesel engines comprising (1) a monohydroxy alkanol having from 1 to 5 carbon atoms, and (2) a wear inhibiting amount of an N-hydroxy hydrocarbonamide having the formula

$$[R]—CO—NH—OH]_n$$

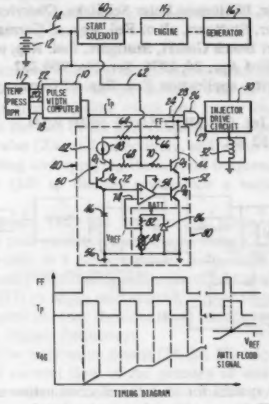
wherein R is a hydrocarbon group having a valence of n and containing from 6 to 51 carbon atoms and n is an integer from 1 to 3.

4,198,932

ANTI-FLOOD CIRCUIT FOR USE WITH AN ELECTRONIC FUEL INJECTION SYSTEM

Junuthula N. Reddy, Troy, and Gerald K. Flagg, Lathrup Village, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 1, 1978, Ser. No. 901,403
Int. Cl.[2] F02D *5/00*
U.S. Cl. 123—32 EG **6 Claims**



1. In a fuel management system for a fuel-injected internal combustion engine comprising engine cranking means providing a cranking signal while the engine is being cranked, at least one electromagnetically actuatable fuel injection valve means, engine synchronization timing generator means for generating a timing signal synchronizing the operation of the injector means with an event in an engine revolution, temperature sensor means providing a temperature dependent signal having a magnitude varying with engine temperature, pulse-width computing means providing a series of variable width injector-actuation pulses, and injector drive circuit means normally operative to actuate the fuel injection valve means for periods corresponding to the widths of the injector actuation pulses transmitted thereto, anti-flood means for reducing the flow of fuel to the engine during cranking characterized by

(a) fuel content storage means operative to store a fuel signal representing the magnitude of the quantity of fuel supplied to the engine during cranking;

(b) variation means adapted to be coupled to said fuel content storage means to vary said fuel signal at a predetermined rate;

(c) first logic means coupled to said fuel content storage means, to said variation means, to the pulse width computing means and to the engine cranking means, said first logic means being operative to couple said variation means and said fuel content storage means during an injector actuation pulse generated in the presence of the cranking signal;

(d) reference means providing a reference signal;

(e) comparator means having a first input coupled to said fuel content storage means and a second input coupled to said reference means; said comparator means providing an incipient flood output signal when the magnitude of said fuel signal exceeds the magnitude of said reference signal; and

(f) second logic means comprising first AND gate means having a first input coupled to the pulse width computing means, a second input coupled to the timing signal generating means, and an output coupled to the injector drive circuit means, second AND gate means having a first input coupled to said comparator means output, a second input coupled to the cranking means, and an output cou-

pled to said second input of said first AND gate means, said second logic means being operative to control the injector drive circuit when said comparator means provides said incipient flood output signal in the presence of the cranking signal.

4,198,933

GOVERNOR SYSTEM FOR INTERNAL COMBUSTION ENGINES

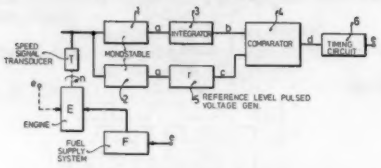
Albrecht Sieber, Böblingen; Peter Schülzke, Oberriexingen, and Peter Werner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 26, 1978, Ser. No. 900,232

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721134

Int. Cl.² F02D *31/00*; F02P *9/00*

U.S. Cl. 123—32 EA **7 Claims**



1. Governor system for an internal combustion engine (E) having means (T,1) providing electrical pulses in synchronism with rotation of the engine and having a recurrence rate dependent on speed and a time duration independent of speed;

integrating means (3) integrating said pulses and deriving an integrated signal representative of speed;

a pulsed reference level voltage generator means (5) connected and controlled to provide a pulse reference signal having a reference level and being pulsed in synchronism with rotation of the engine;

evaluation means (4) controlled by the pulsed reference signal and evaluating said integrated signals with respect to said pulsed reference signal to determine whether the integrated signal, and hence the speed of the engine, exceeds a predetermined level, and

a timing circuit (6) connected to and controlled by said evaluation means (4) and providing a control signal the initiation of which is synchronized with the pulsed reference signal and hence with rotation of the engine for a predetermined time interval to inhibit fuel combustion in the engine for said predetermined time interval if said predetermined level is exceeded.

4,198,934

SIGNAL AMPLIFICATION MEANS

Ralph W. Carp, and John F. Slack, both of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 20, 1978, Ser. No. 917,221

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EA **8 Claims**

1. A regulating arrangement for an internal combustion engine having a throttle and manifold comprising:

means for generating a first analog electrical signal related to the position of such throttle;

means for generating a second analog electrical signal related to the fluid pressure within said manifold;

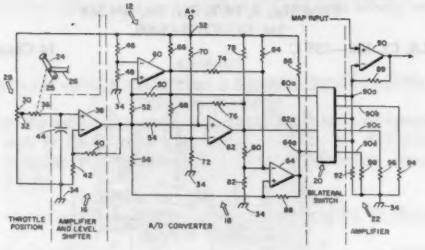
means for generating a digital signal comprised of discrete signal levels related to the instantaneous level of said first analog electrical signal;

amplifier means for amplifying said second analog electrical signal including means for varying the amplifier gain in response to said plural discrete signal levels of said digital signal.

6. Means for changing the effective magnitude of a first quantity related to the level of a first electrical signal by a second quantity related to the level of a second electrical signal comprising:

means for converting said first electrical signal to a digital signal;

an amplifier comprised of an operational amplifier having a resistive feed back circuit whereby the gain of said amplifier is determined, said resistor feed back circuit having a plurality of selectable discrete resistance values; and,



means for selecting a predetermined one of said resistance values in response to a predetermined digital signal, said second electrical signal being connected to one input of said operational amplifier and the other input terminal of said operational amplifier being connected to said feed back circuit for varying the gain of said amplifier in discrete levels.

4,198,935

WATER-COOLED INTERNAL COMBUSTION ENGINE

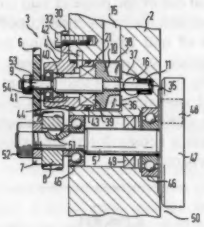
Hans Seibt, Gochsheim, and Rudolf Schlenz, Euerbach, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,324

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 7707211

Int. Cl.² F01P *5/12*

U.S. Cl. 123—41.44 **5 Claims**



1. An internal combustion engine comprising:

(a) a crankcase defining therein an oil reservoir and a pump receptacle separate from said oil reservoir, said crankcase having a side wall defining one exterior surface;

(b) a crankshaft journaled in said crankcase for rotation about a first axis and carrying a crank in said reservoir; (c) a cylinder fixedly mounted on said crankcase and formed with a cooling jacket, said cylinder and said crankcase being formed with respective, communicating bores connecting said pump receptacle to said jacket; (d) a pump assembly located in said pump receptacle including a pump shaft secured to said crankcase for rotation about a second axis spaced laterally from and parallel to said first axis, and an impeller mounted on said pump shaft; (e) drive train means for transmitting the output of said engine to a driven wheel and including a motion transmitting

member fixedly mounted on said crankshaft outside said crankcase adjacent to the exterior surface of said side wall of said crankcase; and (f) a first gear on said crankshaft and a second spur gear mounted on said pump shaft and said first and second spur gear disposed in meshing engagement with each other for turning said pump shaft in response to rotation of said crankshaft, said first spur gear on said crankshaft adjacent to said motion transmitting member in the direction of said first axis said second spur gear located outside said crankcase, said receptacle extending through said side wall into said crankcase and being sealed from said oil reservoir and being accessible only from the exterior of said side wall of said crankcase.

4,198,936

SYSTEM TO CONTROL THE ON-OFF TIME OF A PULSE TRAIN OF VARIABLE FREQUENCY, PARTICULARLY THE DWELL TIME OF IGNITION SIGNALS FOR AN INTERNAL COMBUSTION ENGINE

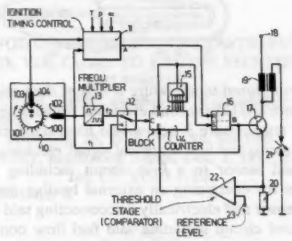
Ernst O. Pagel, Sachsenheim, and Wolfgang Borst, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 888,194

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711894

Int. Cl.² F02P 5/04, 1/00; G06F 7/385

U.S. Cl. 123—117 R **10 Claims**



1. System to control the ON-OFF time of a pulse train of variable frequency in which the ON time is dependent on a variable parameter, comprising

means (10) generating a variable first frequency (f1) as a function of the frequency of said pulse train;

means (10, 13) generating a second variable frequency (f2) differing from said first frequency;

a counter (14);

controlled transfer switching means (12) connected to apply the first frequency (f1) to the counter 14 to thereby commence a first counting cycle during which the counter counts at the rate of the first frequency to a predetermined count value (Z1) and, selectively and when so controlled, to apply the second (f2) to the counter to thereby commence a second count cycle;

means (15, 16) recognizing when the counter reaches said predetermined count value (Z1) and setting said counter to a predetermined count state (zero) as a starting count for the second count cycle, and additionally controlling said control transfer switching means to apply said second frequency (f2) to the counter;

means (20, 22, 23) responsive to said variable parameter and providing an output signal when said parameter has reached a predetermined level and controlling said counter during its second count cycle to then stop counting;

and switch means (17) responsive to the time period between the instant when the counter (14) has reached said predetermined count state (ZERO) and commencement of said first counting cycle and controlling the ON time of said pulse based on said time period, whereby the ON time will be controlled as the function of the parameter and the frequency of the pulse train.

2. In an ignition system for an internal combustion engine having a ignition coil (19),

a system to control the ON-OFF time of current flow through the primary of the ignition coil, in which the ON time is dependent on a predetermined level of current flowing through said primary of the coil comprising

means generating a first variable frequency (f1) as a function of engine speed;

means (10, 13) generating a second frequency (f2) higher than said first frequency;

a counter (14);

control transfer switching means (12) connected to apply the first frequency (f1) to the counter (14) to thereby commence a first counting cycle and cause the counter to count at the rate of the first frequency to a predetermined count value (Z1) and, selectively, and when so controlled, connecting and applying the second frequency (f2) to the counter (14) to thereby commence a second counting cycle;

decode means (15, 16) recognizing when said counter reaches said predetermined count value (Z1) and setting said counter to a predetermined count state (ZERO) and additionally controlling said controlled transfer switching means (12) to apply said second, higher frequency (f2) to the counter to cause the counter to count at the rate of said second, higher frequency;

current flow responsive means (20, 22, 23) responsive to the level of current flow in the primary of said ignition coil and connected to said counter to inhibit counting of the counter and thus to terminate the second count cycle;

means (11) generating an ignition trigger signal (A);

and interrupter switch means (17) connected to said counter (17) closing as a function of the time period after the counter (14) has reached said predetermined count state (ZERO), the ignition trigger signal generating means (11) generating said trigger signal to then interrupt current flow through the primary of the ignition coil, whereby the ON time of said interrupter switch means will be controlled as a function of the speed of the engine and current flow through the ignition coil to provide for closing of said interrupter switch means for a period of time essentially independent of the speed of the engine and will be self adaptive with respect to external operating conditions and self regulating in dependence on the level of current flow through the primary of the ignition coil.

4,198,937

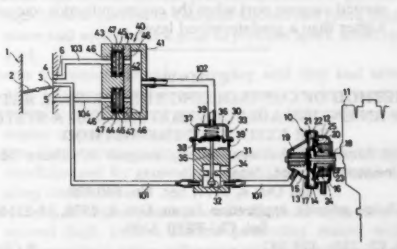
PNEUMATIC CONTROL APPARATUS FOR INTERNAL COMBUSTION

Motoo Suzuki, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 802,155, May 31, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,425

Int. Cl.² F02P 5/02

U.S. Cl. 123—117 A **17 Claims**



1. A pneumatic control apparatus for use in an internal

combustion engine having an exhaust gas cleaning system, characterized by:

(a) a differential pressure responsive unit for controlling the operation of the exhaust gas cleaning system,

(b) a negative pressure passage for communicating a negative pressure derived from an intake passage of the engine to a negative pressure chamber of the differential pressure responsive unit,

(c) a vacuum valve disposed in the negative pressure passage for controlling the magnitude of the negative pressure communicated to said negative pressure chamber,

(d) two air passages for communicating two different negative pressures derived from the engine intake passage to a negative pressure chamber of the vacuum valve, and

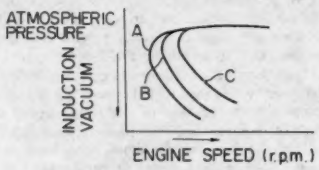
(e) a pair of flow restrictor elements, such as sintered metal orifices individually disposed in the air passage for delaying the communication of said two different negative pressures for a predetermined time.

4,198,938

VACUUM ACTUATED SYSTEM

Masanori Harada, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 18, 1976, Ser. No. 742,994
Claims priority, application Japan, Nov. 19, 1975, 50-139075
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **10 Claims**



1. A vacuum actuated system comprising:

a carburetor induction passage including a throttle valve;

a first vacuum port and a second vacuum port, both being disposed above the idle speed position of said throttle valve, said first and second vacuum ports opening to said carburetor induction passage;

a vacuum servo means;

fluid network means connecting said first and second vacuum ports to said servo means;

control means for selectively opening and closing communication between said second vacuum port and said servo means;

an exhaust gas recirculation control valve spring biased toward a closed position, in which said vacuum servo means moves said exhaust gas recirculation control valve toward an open position in response to vacuum applied thereto, said second vacuum port being disposed upstream of said first vacuum port, and said control means including a solenoid valve means normally closing said second vacuum part, said solenoid valve being operative to open said second vacuum port when the engine induction vacuum is higher than a predetermined level.

4,198,939

METHOD OF CONTROLLING THE AIR-FUEL RATIO OF AN ENGINE AIR-FUEL MIXTURE AND A SYSTEM FOR EXECUTING THE METHOD

Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

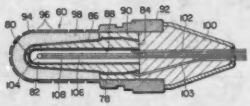
Filed Oct. 6, 1977, Ser. No. 840,099
Claims priority, application Japan, Oct. 8, 1976, 51-121407
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—119 EC **8 Claims**

1. A method of controlling the air-fuel ratio of an air-fuel mixture produced for an internal combustion engine having an intake passageway, a fuel flow control device, an air-fuel ratio sensor of a type that is responsive to air-fuel ratio of a gas mixture only when said sensor is at a temperature higher than a fixed temperature, said fuel flow control device being selectively connected to be responsive to said sensor, and an electrical power source, comprising the steps of

using said sensor, sensing a parameter representative of an air-fuel ratio of the air-fuel mixture in said intake prior to any combustion of said mixture;

monitoring a temperature of said sensor;

comparing said monitored temperature with said fixed temperature and generating (1) a first electrical signal when



said monitored temperature is higher than said fixed temperature and (2) a second electrical signal when said monitored temperature is below said fixed temperature;

in response to said first electrical signal, electrically connecting said sensor to a first circuit including said power source for energizing an external heating means to heat said sensor and electrically disconnecting said sensor from a second circuit including said fuel flow control device; and

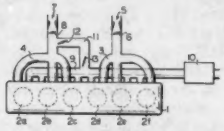
in response to said second electrical signal, electrically disconnecting said sensor from said first circuit and electrically connecting said sensor to said second circuit.

4,198,940

SPLIT OPERATION TYPE MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Yasuhiko Ishida, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 26, 1978, Ser. No. 954,847
Claims priority, application Japan, Jul. 6, 1978, 53-81421
Int. Cl.[2] F02M *25/06, 13/04;* F02D *9/00*
U.S. Cl. 123—119 A **13 Claims**



1. An internal combustion engine having a plurality of cylinders which are divided into a first cylinder group and a second cylinder group, said first cylinder group having a first intake passage and a first fuel supply means, said second cylinder

group having a second intake passage and a second fuel supply means, said engine comprising:

a first throttle valve arranged in said first intake passage for controlling an amount of a combustible mixture fed into said first cylinder group;

a second throttle valve arranged in said second intake passage for normally closing said second intake passage to stop inflow of a combustible mixture into said second cylinder group;

an exhaust passage connected to the cylinders of said first and second cylinder groups;

a bypass passage communicating said exhaust passage with said second intake passage located downstream of said second throttle valve;

valve means arranged in said bypass passage for normally allowing inflow of the exhaust gas into the cylinders of said second cylinder group, and;

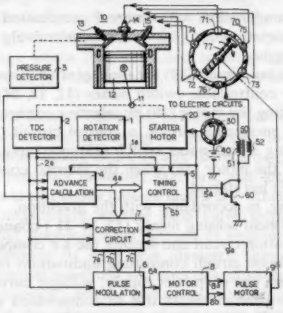
valve control means operatively connected to said first and second throttle valves and said valve means for increasing the opening degree of said first throttle valve in accordance with an increase in the level of a load of said engine and for closing said valve means and starting the opening operation of said second throttle valve to stop inflow of the exhaust gas and allow inflow of the combustible mixture into the cylinders of said second cylinder group when the load of said engine is increased beyond a predetermined level.

4,198,941

METHOD FOR CONTROLLING THE DISTRIBUTION OF SPARK VOLTAGES TO ENGINE MULTIPLE CYLINDERS

Kazuo Oishi, Obu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 26, 1978, Ser. No. 946,076
Claims priority, application Japan, Dec. 2, 1977, 52-145278
Int. Cl.[2] F02D 7/02
U.S. Cl. 123—146.5 A **7 Claims**



1. A method for controlling the distribution of spark voltages to multiple cylinders of a combustion engine having an output shaft by a spark voltage distributor having stationary electrodes and a rotatable electrode arranged to engage with said stationary electrodes one by one so that the combustible mixture supplied to said cylinders is ignited sequentially by ignition spark voltages to rotate said output shaft, said method comprising the steps of:

detecting operating conditions of said combustion engine including rotation speed of said output shaft;

calculating an ignition spark position of said output shaft of said combustion engine in response to the detected values of said operating conditions;

generating ignition spark voltages for respective cylinders of said combustion engine when the rotational position of said output shaft reaches the calculated value of said ignition spark position; and

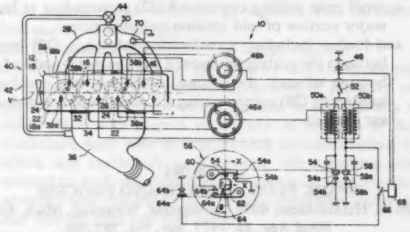
rotating said rotatable electrode of said spark voltage distributor by an electric motor at a speed depending upon the detected value of said rotation speed and the calculated value of said ignition spark position so that said rotatable electrode is engaged with said stationary electrodes upon generation of said ignition spark voltages.

4,198,942

DUAL SPARK PLUG IGNITION ENGINE WITH EGR SYSTEM

Hiroshi Kuroda, Tokyo; Yasuo Nakajima, Yokosuka, and Yoshimasa Hayashi, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 15, 1977, Ser. No. 860,901
Claims priority, application Japan, Dec. 17, 1976, 51-150733
Int. Cl.[2] F02P 1/00
U.S. Cl. 123—148 DS **9 Claims**



1. An internal combustion engine having a combustion chamber, comprising:

first and second spark plugs disposed in the combustion chamber;

means for recirculating a portion of exhaust gases back to the combustion chamber;

first high tension current generating means for generating high tension current to energize said first spark plug to cause said first spark plug to produce spark when operated;

second high tension current generating means for generating high tension current to energize said second spark plug to cause said second spark plug to produce spark when operated;

means for simultaneously operating said first and second high tension current generating means to simultaneously energize said first and second spark plugs under normal engine operating condition;

means for detecting a high power output engine operating condition and for generating a signal indicating said operating condition; and

switching means, responsive to said signal, for operating said second high tension current generating means with a predetermined phase difference relative to the operation of said first high tension current generating means under said high power output engine operating conditions.

4,198,943
COMPOSITE ELECTRONIC IGNITION SYSTEM STRUCTURE

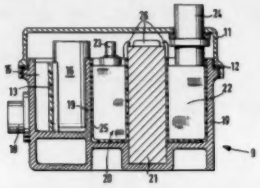
Paul Wörz, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 12, 1978, Ser. No. 895,768

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720065

Int. Cl.² F02B 77/00

U.S. Cl. 123—148 D **8 Claims**



1. Composite electronic ignition system structure comprising

a housing (9, 19) having walls defining a well or trough tub-like structure (10);

means (15) retaining a circuit structure and at least one electronic control component (14, 16) secured in said housing;

an ignition coil structure (20, 21) located in said housing well adjacent the circuit structure (13) and said at least one control component (16), at least some of the housing walls adjacent said coils being of metal;

a cured resin potting compound (22) surrounding at least a major portion of said ignition coil structure;

and further including a cushioning substance (25) located between the potting compound and the metal walls of said housing adjacent the potting compound, said cushioning substances (25) compensating for temperature and shrinkage stresses.

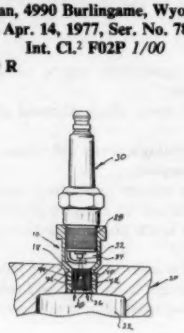
4,198,944
SPARK PLUG ADAPTER AND PROCESS

Leo A. Heintzelman, 4990 Burlingame, Wyoming, Mich. 49509

Filed Apr. 14, 1977, Ser. No. 787,356

Int. Cl.² F02P 1/00

U.S. Cl. 123—169 R **20 Claims**



1. A spark plug adapter for an internal combustion engine comprising a hollow member having a relatively small portion provided with a male thread complementary to the female thread in the bore of the internal combustion engine, which bore is intended to receive said spark plug and which thread is complementary to the male thread of said spark plug, and a relatively large upper portion provided with a female thread complementary to the male thread of said spark plug whereby the lower portion of said hollow member can be threaded into the spark plug-receiving bore of the internal combustion engine and said spark plug threaded into the upper portion of said hollow member, said hollow member comprising a preliminary combustion chamber having an enlarged upper portion adapted to surround the spark gap of said spark plug when it is threaded in said bore and a relatively small lower portion provided by an open-ended axial bore and extending into the threaded bore but not below the bottom thereof, and a relatively thin transverse member spanning said axial bore across a diameter thereof which functions to divide the preliminary combustion products into two separate and substantially equal streams and to impart a turbulence thereto as they pass into the internal combustion engine, said axial bore extending to an unobstructed axial opening through which pass into said internal combustion engine all of said preliminary combustion products which have been divided by said transverse member.

4,198,945
INTERNAL COMBUSTION ENGINE STARTER DISCONNECT SYSTEM

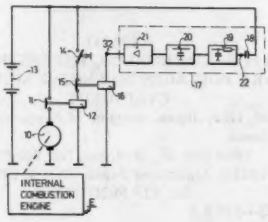
Manfred Eyermann, Illingen, and Wolfgang Pfeifer, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 29, 1977, Ser. No. 865,580

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1977, 2700982

Int. Cl.² F02N 17/00, 11/08

U.S. Cl. 123—179 B **15 Claims**



1. For combination with internal combustion engine (E) having a starter motor (10) which is selectively engageable with the engine,

an energizing circuit (13) for the motor (10); and

manually controllable switch means (11, 12, 14) selectively energizing the motor (10) by selective connection thereof to the energizing circuit, a control circuit (16, 17, 17') including a disconnect switch (15) interrupting energization of the motor (10) when the internal combustion engine (E) has started,

comprising, in accordance with the invention,

a-c component sensing means (17; 18–21) connected to the energization circuit and sensing the a-c component in the energization circuit comprising undulations or pulsations of at least one of: power supply; voltage; current flow; in the energization circuit due to compression and decompression of gases in the internal combustion engine when the motor is energized but before the engine has started

including

evaluation circuit means (19–21; 23, 31) evaluating an undulation or pulsation characteristic of said a-c component and providing a disconnect signal to said disconnect switch (15) when said a-c component essentially disappears due to starting of the internal combustion engine.

13. In a system for starting an internal combustion engine (E) with an electric starter motor (10),

the method of determining when the engine has started to provide a starter motor disconnect signal, comprising the steps of

separating the a-c or pulsating or undulating component of starter power applied to the motor;

evaluating said a-c component;

and providing said disconnect signal as a function of said evaluation.

4,198,946

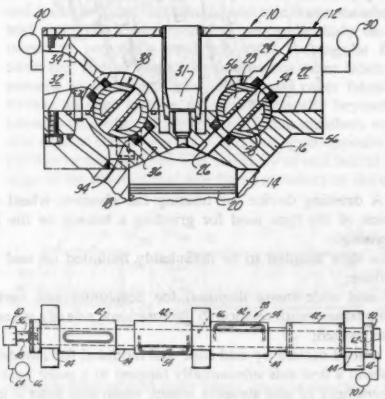
ROTARY VALVE CONSTRUCTION FOR AN INTERNAL COMBUSTION ENGINE

Louis J. Rassey, 29048 Gloede, Warren, Mich. 48093

Filed Jun. 3, 1977, Ser. No. 803,051

Int. Cl.² F01L *7/00*

U.S. Cl. 123—190 E **14 Claims**



1. In an internal combustion engine of the type having a housing with at least one cylinder formed in said housing, at least one piston member reciprocally received in said cylinder, fuel intake passage means formed in said housing for communicating a combustible mixture to said cylinder, ignition means for igniting said combustible mixture in said cylinder, and exhaust passage means formed in said housing for expelling exhaust gases from said cylinder, the improvement which comprises:

a first and a second one-piece cylindrical valve member, each valve member having at least one throughbore formed substantially diametrically therethrough,

means for rotatably mounting said first and second valve members in said intake passage means and exhaust passage means, respectively, so that each valve member establishes fluid communication through its respective passage means through its respective diametric throughbore at predetermined rotational positions of said valve members,

means for rotatably driving said valve members in synchronism with the reciprocation of said piston member,

wherein each valve member includes at least one axial fluid passageway,

means for providing a flow of a fluid coolant through said axial passageway in each of said valve members wherein each valve member includes at least two axially spaced reduced diameter portions formed therealong and wherein said rotatable mounting means further comprises at least two bearing means contained within said housing and each bearing means being adapted to engage one of said reduced diameter portions of said valve member, and wherein each bearing means comprises a pair of one-piece semicircular shell halves, each of a pair of said semicircular shell halves being separately insertable into said housing and around one reduced diameter portion of said one-piece valve member.

4,198,947

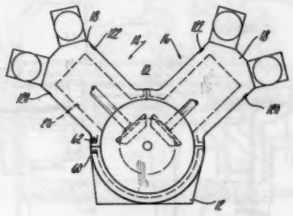
MODULAR ENGINE CONSTRUCTION

Louis J. Rassey, 29048 Gloede, Warren, Mich. 48093

Division of Ser. No. 733,996, Oct. 20, 1976, Pat. No. 4,135,478. This application Aug. 28, 1978, Ser. No. 937,422

Int. Cl.² F02B *75/16*

U.S. Cl. 123—55 R **8 Claims**



1. A modular engine comprising:

a crankcase open at its top and forming a mounting flange along each upper side of the crankcase;

a crankshaft;

first engine block having a mounting flange formed along each side, said first engine block being positioned on said crankcase so that one first engine block flange registers with one of the crankcase flanges;

a second engine block having a mounting flange formed on each side, said second engine block being positioned on the crankcase so that one second engine block flange registers with the other crankcase flange whereupon the other second engine block flange registers with the other first engine clock flange;

means for securing said registering flange together;

said crankshaft being solely supported by said crankcase via a rotatably mounting means comprising a plurality of spaced webs, each web being oriented in substantially a radial plane with respect to the axis of rotation of the crankshaft, each web having an axial arcuate channel in which said crankshaft is positioned, and a bearing cap secured to each web and across the web arcuate channel whereby said crankshaft is rotatably journalled between said bearing caps and said webs;

so that said engine blocks can be removed from said crankcase without detaching said crankshaft from said rotatably mounting means; and

wherein each engine block reciprocally carries at least one piston member therein, each piston member being operatively coupled to said crankshaft to effect the rotation of the crankshaft upon reciprocation of the piston member within the engine block.

4,198,948

INSTALLATION FOR THE METERED LUBRICATION OF AN INJECTION PUMP FLANGEDLY CONNECTED TO AN INTERNAL COMBUSTION ENGINE

Ulrich Conrad, Ludwigsburg, and Gerd Niemeier, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 961,928

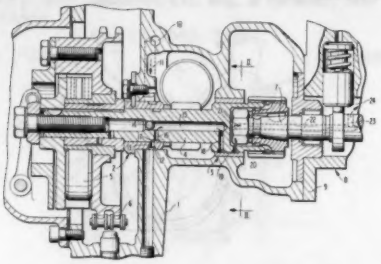
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753332

Int. Cl.² F01M *1/06*

U.S. Cl. 123—196 R **11 Claims**

1. An installation for the metered lubrication of an injection pump connected with an internal combustion engine, in which a cam shaft is driven by an intermediate gear shaft non-rotatably connected with the cam shaft, said intermediate gear shaft being rotatably supported in the internal combustion engine on two slide bearing means and being lubricated from a connection to a lubricating oil channel of the internal combustion

engine, characterized in that at least one of the slide bearing means of the intermediate gear shaft is constructed in conjunction with the intermediate gear shaft as metering means, and in that the metered lubricating oil, after leaving said last-mentioned slide bearing means, is conducted by way of a sealed



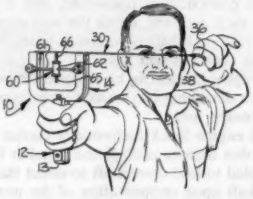
space formed within the area of the connecting place between the cam shaft and the intermediate gear shaft, to a central bore through the cam shaft of the injection pump, from where the lubricating oil reaches the injection pump through a radial bore.

4,198,949

SLINGSHOT WITH ADJUSTABLE SIGHT

Julian L. Cook, 106 Morningside Dr., Albany, Ga. 31705

Filed May 19, 1978, Ser. No. 907,806
Int. Cl.[2] F41B *3/00*
U.S. Cl. 124—20 R **21 Claims**



1. A slingshot characterized by improved accuracy arising from the ability to sight the target under varying wind conditions and at varying distances, and comprising

a generally Y-shaped slingshot body including a handle defining a longitudinal direction, and two forked prongs mounted on one end of said handle and extending outwardly therefrom,

elastic band means mounted to each of said prongs adjacent the remote ends thereof for carrying and projecting a projectile,

a sight for aiming the slingshot, and

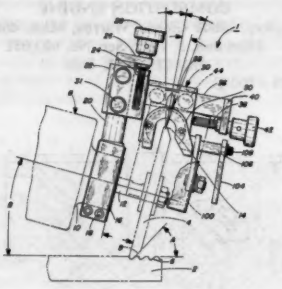
means spanning the distance between said prongs for adjustably mounting said sight substantially between and independent of said prongs so as to permit both movement of said sight perpendicularly with respect to the longitudinal direction for lateral adjustment thereof and to support said sight for movement in the longitudinal direction for elevational adjustment thereof, whereby said sight may be adjusted to accommodate variations in both horizontal alignment and distance.

4,198,950

DRESSING DEVICE FOR WHEELS OR THE LIKE

Charles P. Van DeMotter, 16104 Lucille Dr., Cleveland, Ohio 44111

Continuation of Ser. No. 753,615, Dec. 22, 1976, abandoned.
This application Apr. 13, 1978, Ser. No. 896,047
Int. Cl.[2] B24B *53/08*
U.S. Cl. 125—11 TP **4 Claims**



1. A dressing device for treating the abrasive wheel of a machine of the type used for grinding a broach or the like, comprising:

(a) a slide adapted to be detachably mounted on said machine;

(b) said slide being disposed for horizontal and vertical movement with relation to the rotational axis of a wheel to be treated;

(c) a head carried by said slide and mounted for movement about a first axis substantially tangent to a point near the periphery of said abrasive wheel, when said head is in its operative position, said axis being substantially parallel to the plane formed by said grinding wheel;

(d) adjustment means for selectively adjusting the position of said head relative to said slide;

(e) said head including a cam track member defining an outer cam surface having straight and arcuate portions, and having a cam slot formed therein, said cam track member forming a generally U-shaped aperture extending transverse to said head and having an imaginary axis substantially coincident with said first axis;

(f) said U-shaped aperture surface forming the same general shape relative to the grinding wheel as the shape to be formed in a work piece;

(g) a cam follower adapted to be disposed in said cam slot;

(h) said cam follower including a wheel dressing member adapted to be disposed in said cam slot for sliding arcuate and rectilinear movement, and for engaging the peripheral portion of a wheel to be treated; and,

(i) guide means on said cam follower defining spaced cam track confronting surfaces on either side of the longitudinal axis of said dressing member, said guide means establishing spaced lines of contact between said cam follower and said outer cam surface on either side of the longitudinal axis of said dressing member.

4,198,951

OVEN WALL PANEL CONSTRUCTION

Kenneth Ellison, 20 Avondale Cres., Markham, and Alan S. White, R.R. #1, Caledon East, both of Ontario, Canada

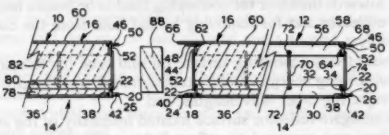
Filed Nov. 21, 1977, Ser. No. 853,391
Int. Cl.[2] A21B *1/00*; E04C *1/10*
U.S. Cl. 126—19 R **10 Claims**

1. A modular oven panel which comprises:

an inner fabric which in turn comprises: mutually spaced apart and mutually parallel first and second side frame members of L-shaped angle section having lateral outer

edges; mutually spaced apart and mutually parallel end frame members secured to said side frame members and extending perpendicularly therebetween to provide a relatively rigid rectangular frame structure; and an essentially continuous inner fabric skin secured to said frame structure and having an edge portion projecting laterally beyond said lateral outer edge of one of said side frame members and terminating laterally inwardly of said lateral outer edge of the other of said side frame members so as to provide a transversely inwardly directed face of said side frame exposed beyond said inner fabric skin;

an outer fabric transversely outwardly spaced from said inner fabric and which in turn comprises: mutually spaced apart and mutually parallel first and second side frame members of L-shaped angle section having lateral outer edges; mutually spaced apart and mutually parallel end frame members secured to said side frame members of said outer fabric and extending perpendicularly therebetween to provide a relatively rigid rectangular frame structure; and an essentially continuous outer fabric skin secured to said frame structure of said outer fabric and having an edge portion projecting laterally beyond said lateral outer edge of one of said frame members on one side edge of said outer fabric, and having an opposite edge portion terminating laterally inwardly of said lateral outer edge of the other of said side frame members on the opposite side edge of said outer fabric, so as to provide a transversely outwardly directed face of said side frame member exposed beyond said outer fabric skin on said opposite side edge, said projecting edge portions of said inner and outer fabric skins defining a predetermined spacing therebetween and being free of fold lines whereby to lie in the same plane as their respective inner and outer fabric skins, and said exposed faces of said inner and outer side frame portions defining a predetermined spacing adapted to be slidably received within said projecting edge portions of said inner and outer fabric skins of an adjacent said panel; and transverse tie members secured to said frame members of said inner fabric and said outer fabric and extending therebetween to maintain said fabrics in mutually spaced apart disposition said tie members being resilient to permit thermal expansion of one said fabric relative to the other, whereby two said modular oven panels can be placed in side-by-side disposition with said inner fabric skin of one such panel overlying a said exposed face of a said side frame member of the inner fabric of the other such panel and with said outer fabric skin of one such panel overlying a said exposed face of a said side frame member of the outer fabric of the other such panel for relative telescopic movement of such fabric skins across said exposed faces of said side frame members on expansion and contraction of said fabrics while said oven panels form a smooth wall both on the inner and outer sides free of fold lines.



4,198,952

STOVE

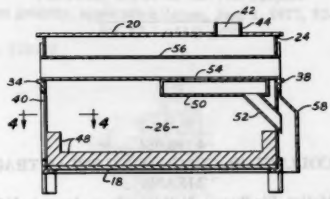
Allen L. Mitchell, Butler, Ohio, assignor to Paul David Hill, Ashland, Ohio

Division of Ser. No. 608,067, Aug. 25, 1975, Pat. No. 4,096,847. This application Apr. 13, 1978, Ser. No. 896,007

Int. Cl.[2] F24C *1/14*

U.S. Cl. 126—61 **2 Claims**

1. A stove for burning wood and the like comprising: an enclosure having four sides and a top surrounding a fire chamber for solid combustible materials and with substantially all surfaces of said top and four sides being exposed to line of sight radiation from fire in said fire chamber; a warm air conduit extending generally between two opposite sides of said fire chamber and being spaced from the side walls of said enclosure so that the bottom and sides of said conduit are exposed to line of sight radiation from said solid combustible materials, said warm air conduit opening outwardly of both sides of said enclosure and having a large enough cross section that air can enter from both sides and flow along the bottom of said warm air conduit while warm air flows outwardly along the top of said conduit; a smoke exit adjacent the top of said enclosure and generally centered between opposite sides of said warm air conduit, so that flame from said solid combustible material periodically extends around both sides of said warm air conduit and over the top thereof to preclude build up of creosote and/or other condensible combustible materials thereon.



4,198,953

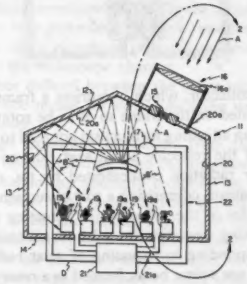
SOLAR ILLUMINATED ENERGY CONSERVING GREENHOUSE

Dean V. Power, Sandy, Utah, assignor to Terra Tek, Inc., Salt Lake City, Utah

Filed Mar. 28, 1978, Ser. No. 891,149

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—428 **21 Claims**



1. A solar illuminated energy conserving greenhouse comprising,

a structure adapted for use as a greenhouse having upstanding walls and a roof thereover and having at least one portal formed therethrough, said walls and roof being insulated appropriately so as to minimize heat losses from said structure, said structure having also at least one opening formed therethrough for passing focused sunlight into said structure, said opening being covered appropriately with a transparent arrangement;

a lens means for gathering and focusing sunlight and directing said collected sunlight through said opening into said structure;

a sunlight filtering means for receiving the collected sunlight and for removing for use in heating said structure the infra red spectra portions of that sunlight while passing the

remaining spectra portions of said sunlight therethrough, and;

diffuser means arranged to receive said remaining spectra portions of said sunlight from said sunlight filter means spreading and distributing it within said structure.

4,198,954

SOLAR COLLECTOR, COMPRISING SOLAR TRACKING MEANS

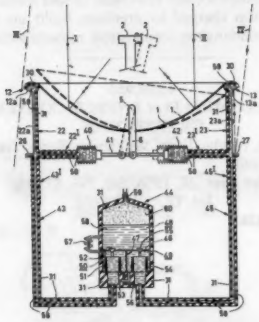
Roelf J. Meijer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1977, Ser. No. 849,038

Claims priority, application Netherlands, Feb. 21, 1977, 7701812

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—425 **12 Claims**



1. A solar collector, which comprises a frame; a focussing reflector mounted on the frame so as to be rotatable about at least one axis; an adjusting mechanism coupled to said reflector for rotation of the reflector about said axis; an absorber for receiving solar radiation concentrated by the reflector; and solar-tracking means comprising a pair of sun sensors disposed on opposite sides of the reflector for actuating the adjusting mechanism during operation in order to maintain a reflector position corresponding to focussing of solar radiation on the absorber, each sun sensor being formed as a reservoir having a solar radiation-absorbing wall and containing a high-pressure working medium whose thermal expansion is proportional to the quantity of solar radiation incident on the solar radiation-absorbing reservoir wall, first ducts containing a pressure transfer medium and connecting the respective reservoirs to the adjusting mechanism, and second ducts respectively in open communication with the first ducts and also containing a pressure transfer medium and connecting the respective reservoirs to a source of high-pressure medium under constant pressure, the second ducts each including a member respectively controlled by the two high-pressure working mediums, whereby, upon a difference in expansion of the two high-pressure working mediums occurring in a reflector position other than its desired position, only the member included in the second duct between the source of high-pressure medium at constant pressure and that first duct having the lower pressure is operated to open said second duct.

4,198,955

SOLAR ENERGY COLLECTION SYSTEM

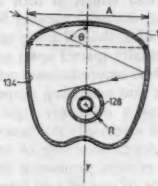
Leo R. Dorbeck, Campbellville, Canada, assignor to Canadian Sun Systems Ltd., Campbellville, Canada

Continuation-in-part of Ser. No. 850,154, Nov. 10, 1977. This application May 3, 1978, Ser. No. 902,381

Claims priority, application United Kingdom, Nov. 15, 1976, 47564/76; Canada, Mar. 30, 1977, 275382

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—439 **27 Claims**



1. A solar collector comprising:

an outer evacuated elongate envelope having an upper transparent surface to admit light rays to the envelope,

a tube extending in the envelope from one end thereof towards the other for conveying fluid to be heated into the collector and for removing heated fluid from the collector,

a selectively absorbing surface on said tube for selectively absorbing energy having predetermined wavelengths and rejecting other wavelengths, and

an elongate reflector surface located internally of the envelope and arranged to reflect light received through the transparent surface onto said tube,

said upper transparent surface and said tube being dimensioned to provide a concentration ratio which is the ratio of the transverse width of the upper transparent surface to the outer circumference of the tube and has a value from about 1 to about 50,

said reflector surface having mirror image cross-sectional-shaped portions on either side of a vertical axis of the reflector surface each having a length required to ensure that no less than about 75% of the maximum efficiency of the collector is realized,

said maximum efficiency being provided by the shape of said reflector surface required to ensure that all incident rays received into the envelope through the upper transparent surface within the acceptance angle θ subtended to said vertical axis and determined by the equation:

$$C = 1/\sin\theta$$

where C is the concentration ratio and θ is the acceptance angle, are concentrated on said tube while rays outside the acceptance angle are reflected.

4,198,956

MULTI-PURPOSE SOLAR ENERGY COLLECTOR

Bertrand S. Soleau, Jr., Chantilly, Va., assignor to Joe Simpkins, Clayton, Mo.

Filed Nov. 1, 1977, Ser. No. 847,567

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—444 **9 Claims**

1. A portable solar energy collector comprising:

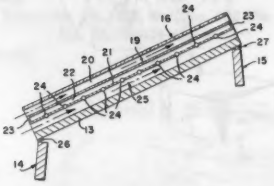
a housing made of a heat insulating material, said housing being made of a heat insulating material and having a bottom member, two side members and two end members;

a first transparent plate secured inside said housing;

a second transparent plate secured inside said housing and spaced apart from said first transparent plate such that a first channel is formed between said first transparent plate and said second transparent plate, said first channel being

closed at one end by one of said two end members and being closed at its other end by the other one of said two end members when said two end members are closed on said two side members, said bottom member and said first transparent plate;

a heat absorber panel secured inside said housing between said second transparent plate and said bottom member, thereby forming a second channel between said second transparent plate and said absorber panel and a third channel between said absorber panel and said bottom member, said third channel being closed at one end by one of said



two end members and being closed at its other end by the other one of said two end members when said two end members are closed on said two side members, said bottom member and said first transparent plate;

a first end piece secured to one end of said second channel to seal said one end of said channel and a second end piece secured to the other end of said second channel to seal said other end of said second channel, whereby said second channel is a closed channel formed by said second transparent plate, said absorber plate and said first and second end pieces; and

means to selectively heat air and fluid.

4,198,957

METHOD OF USING AN ELECTRICALLY HEATED SURGICAL CUTTING INSTRUMENT

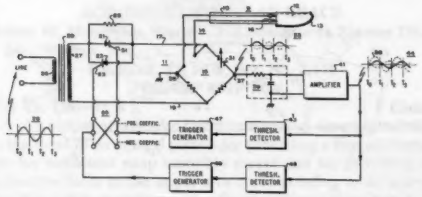
John M. Cage, Los Altos, Calif.; Robert F. Shaw, 2316 Leavenworth St., San Francisco, Calif. 94100, and Paul E. Stoft, Menlo Park, Calif., assignors to Robert F. Shaw, San Francisco, Calif.

Division of Ser. No. 534,756, Dec. 2, 1974, Pat. No. 4,089,336, which is a continuation of Ser. No. 63,645, Aug. 13, 1970, abandoned, which is a continuation of Ser. No. 681,737, Nov. 9, 1967, abandoned. This application Mar. 22, 1977, Ser. No. 780,031

The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.

Int. Cl.[2] A61B *17/32*

U.S. Cl. 128—1 R **1 Claim**



1. A method of hemostatic cutting using a blade means having a cutting edge operating at an elevated temperature, the method comprising:

heating the cutting edge by conducting an electrical current in a conduction path along the cutting edge including a conductive means having a negative temperature coefficient of resistance; and

self regulating the heating of the cutting edge by increasing the electrical resistance of those portions of the electrical conduction path that are cooled.

4,198,958

FLEXIBLE CAP AND INSTRUMENT SEAL FOR A SUCTION CONTROL DEVICE IN AN ENDOSCOPE

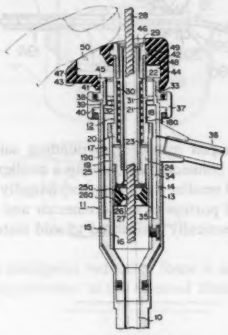
Mikio Utsugi, Machida, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 26, 1978, Ser. No. 909,984

Claims priority, application Japan, Jun. 1, 1977, 52-71197

Int. Cl.[2] A61B *1/00*

U.S. Cl. 128—5 **4 Claims**



1. A suction control device in an endoscope comprising:

an outer tube means mounted in an operation section of an endoscope and having a distal end and a proximal end, said distal end communicating with an endoscope channel extending in the endoscope;

an inner tube means inserted into the outer tube means for communicating with the endoscope channel and having a distal end portion and proximal end;

an elastic sealing member mounted in the distal end portion of the inner tube means and having a central aperture with a diameter of an elongated medical instrument to be inserted into the endoscope channel;

an air chamber defined between the outer tube means and the inner tube means for communicating with the endoscope channel;

a suction pipe extending outwardly from the outer tube means for communicating with the air chamber; and

an elastic, flexible cap sealingly mounted on the proximal end of the outer tube means and the proximal end of the inner tube means and having a first inlet communicating with the inner tube means and a second inlet communicating with the air chamber, said first inlet and said second inlet being arranged adjacent to each other so as to be blocked simultaneously by a finger cushion.

4,198,959

SEALING DEVICE FOR AN ENDOSCOPE GUIDE WIRE ASSEMBLY

Yutaka Otani, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1978, Ser. No. 918,504

Claims priority, application Japan, Jun. 30, 1977, 52-85410[U]

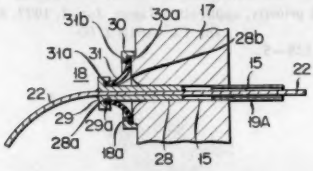
Int. Cl.[2] A61B *1/00*

U.S. Cl. 128—5 **4 Claims**

1. In an endoscope comprising a medical instrument-leading chamber in a distal end portion thereof, a guide hole extending through said distal end portion, an operating wire passing through said guide hole and having one end portion extending through said chamber and a sealing device disposed in said chamber for effecting sealing between said chamber and said

guide hole, the improvement wherein said sealing device comprises:

an elongated hollow cylindrical connector hermetically and reciprocatingly inserted into said guide hole and hermetically and firmly holding said operating wire inserted thereinto, said connector having one end portion projecting in said chamber; and



an elastic bell-shaped member surrounding said one end portion of said connector and having a smaller end and a larger end, said smaller end being hermetically connected to said one end portion of said connector and said larger end being hermetically connected to said distal end portion.

4,198,960

APPARATUS FOR REMOVING A FOREIGN MATTER HAVING INDIVIDUALLY OPERABLE TRAPPING AND FLEXING WIRES, A CENTRAL CHANNEL FOR ILLUMINATION, SUCTION AND INJECTION AND A LATERALLY DISPOSED BORE FOR FEEDING FLUIDS

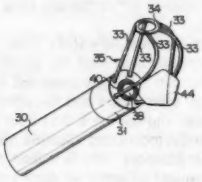
Mikio Utsugi, Machida, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1978, Ser. No. 873,779

Claims priority, application Japan, Jan. 31, 1977, 52/10194[U]

Int. Cl.[2] A61B *1/06, 1/12, 1/30*

U.S. Cl. 128—6 **11 Claims**



1. Apparatus for removing foreign matter from a body cavity comprising:

an elongated sheath made of flexible material and having bores extending through a lateral wall thereof;

a hollow cylindrical central channel extending through the sheath;

a connecting member disposed at a distal end of the sheath and provided at a center thereof with an opening larger than the diameter of the central channel of the sheath; and

a plurality of elastic, flexible trapping wires passing through respective ones of said bores so as to be individually movable lengthwise of the sheath, said trapping wires having ends at the distal end of the sheath connected to the connecting member in a circumferentially spaced relation to each other.

4,198,961

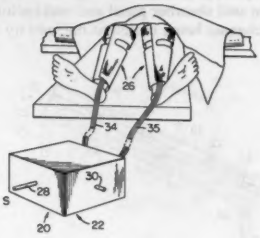
COMPRESSION DEVICE WITH SLEEVE RETAINED CONDUITS

Edward J. Arkans, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jan. 12, 1979, Ser. No. 2,823

Int. Cl.[2] A61H *1/00*

U.S. Cl. 128—24 R **3 Claims**



1. A sleeve for applying compressive pressures against a patient's limb, comprising:

a pair of flexible sheets of fluid impervious material having a pair of side edges, and a pair of end edges connecting said side edges;

means for connecting said sheets together along lines defining a plurality of separate laterally extending inflatable chambers disposed longitudinally along the sleeve, and defining a pair of opposed flaps adjacent one of said side edges extending longitudinally along the sleeve, with a flap of one of said sheets having a plurality of openings spaced longitudinally along the flap of said one sheet;

a plurality of conduits; and

a plurality of connectors secured to said one sheet and connecting said conduits in fluid communication with said chambers, said conduits extending from said connectors through the flap openings of said one sheet and between the flaps toward one end edge of the sheets.

4,198,962

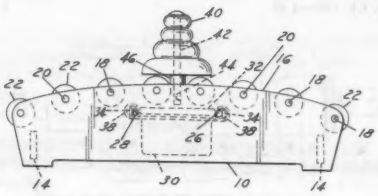
FOOT MASSAGER

Kerry McCauley, 9607 E. Sturgeon Valley Rd., Vanderbilt, Mich. 49795

Filed May 26, 1978, Ser. No. 909,762

Int. Cl.[2] A61H *1/00*

U.S. Cl. 128—33 **15 Claims**



1. A foot massager comprising a supporting frame, a plurality of parallel rods and a plurality of rotatable balls mounted on the rods, the rods being attached to the frame to dispose the balls into a generally convex arcuate massaging surface, and a detachable vibrator attached to the frame beneath the massaging surface and located within the frame, the vibrator attachment means being adapted to transmit vibrational energy to the frame and thereby to the balls, the improvement characterized by,

the attachment means including a pair of parallel rods lo-

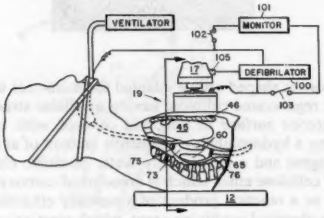
cated beneath the massaging surface and rigidly attached to the frame, a plurality of grips adapted to engage the pair of parallel rods and means to retain the grips in tight engagement with the pair of parallel rods for the transmission of vibrational energy to the frame.

4,198,963

CARDIOPULMONARY RESUSCITATOR, DEFIBRILLATOR AND MONITOR

Clare E. Barkalow, Comstock Park, Mich., and James O. Elam, Chicago, Ill., assignors to Michigan Instruments, Inc., Grand Rapids, Mich.

Filed Oct. 19, 1978, Ser. No. 952,656
Int. Cl.[2] A61H *31/00*
U.S. Cl. 128—53 **36 Claims**



1. A cardiac compressor and defibrillator comprising in combination:

a reciprocatable cardiac compressor means for cyclically compressing a patient's chest;

an external cardiac compressor pad for positioning anterior to the patient's heart, said compressor pad being connected to and actuated by said compressor means for compressing the patient's sternum and heart;

an external electrode disposed on said compressor pad for compression between said compressor pad and the patient's sternum;

a first internal electrode;

a means for positioning said first internal electrode in the patient's esophagus, posterior to the patient's heart;

a cardiac defibrillator means connected to said external and internal electrodes for establishing an electric current therebetween; and

a means for synchronizing said defibrillator means and said compressor means whereby a defibrillating current is applied to the patient's heart only during compression of a patient's heart.

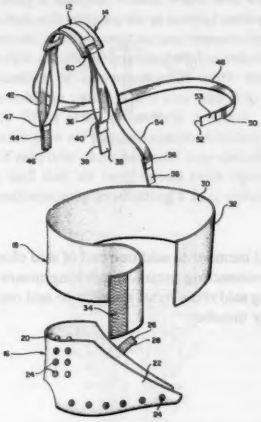
4,198,964

ACROMIOCLAVICULAR BRACE

Robert W. Honneffer, Warsaw, Ind., assignor to Zimmer USA, Inc., Warsaw, Ind.

Filed Jan. 11, 1979, Ser. No. 2,672
Int. Cl.[2] A61F *5/04*
U.S. Cl. 128—87 R **7 Claims**

1. An acromioclavicular brace comprising: means attachable to the torso of an injured person for providing a first anchoring site for reduction strap assembly means and for providing an adductive force to the upper arm corresponding to an injured shoulder joint; mounting means for providing a second anchoring site for the reduction strap assemblies at a position disposed adjacent the ulna of the affected arm; a resilient force-focusing member adapted to be positioned superior to the distal end of the affected clavicle; semblant pulley means for providing mechanical advantage, said semblant pulley means including ring means having at least one straight, elongate portion; and at least one force multiplying reduction strap assembly means including two or more ambient pulley means and flexible connecting means adapted for coursing through said semblant pulley means and attaching to said first means mentioned, said second means mentioned, and said force focusing member whereby an adductive force is applied to said second named



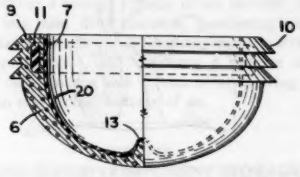
means and a multiplied reductive force is applied through the force focusing member to the affected distal clavicle.

4,198,965

DISPOSABLE CONTRACEPTIVE CERVICAL BARRIER

Robert L. Strickman, Lawrence Rd., R.D. 1, Bridgeton, N.J. 08302; Erick-Pierre Fournier, 30 Park Ave., New York, N.Y. 10016, and Melvyn B. Strickman, Lawrence Rd., R.D. 1, Bridgeton, N.J. 08302

Filed Jul. 17, 1978, Ser. No. 924,971
Int. Cl.[2] A61J *5/46*
U.S. Cl. 128—127 **51 Claims**



1. A disposable contraceptive intravaginal cervical barrier, which comprises

a substantially circular, flexible member, said member being formed of a foam plastic material and having one surface of said member cured during manufacture so that said surface is impermeable to the passage of sperm, and

a medicament that is pre-impregnated within said foam plastic material during manufacture of the barrier and that is activatable upon contact with an aqueous substance.

4,198,966

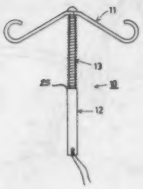
INTRAUTERINE CONTRACEPTIVE AND METHOD OF MANUFACTURING THE SAME

Seppo Kaivola, Linnanherrantie 3B, 00950 Helsinki 95, Finland

Filed Aug. 2, 1978, Ser. No. 930,187
Claims priority, application Finland, Jun. 29, 1978, 782102
Int. Cl.[2] A61F *5/46*
U.S. Cl. 128—130 **10 Claims**

1. An intrauterine contraceptive device comprising: an elongated body member; a spiral member formed of copper dis-

posed around said body member; a transversal member connected at its substantial midpoint to one end of said elongated body member by connecting means; and means for connecting



said transversal member to said one end of said elongated body member, said connecting means comprising means for detachably connecting said transversal member to said one end of said elongated body member.

4,198,967

TONGUE HOLDER

Leon L. Dror, 15641 N. 21st St., Phoenix, Ariz. 85022

Filed Jan. 13, 1978, Ser. No. 869,306

Int. Cl.[2] A61M *15/00*

U.S. Cl. 128—136 **4 Claims**

1. Apparatus for grasping and holding a tongue to prevent the tongue from obstructing the trachea comprising:

(a) an upper and a lower clamp arm each having a first surface opposing the other and each having a second surface facing away from the other;

(b) an upper and lower clamp each secured at a distal end of said upper and lower clamp arm, respectively, for grasping and holding the tongue of an unconscious person, said clamps each including an indented portion to prevent said clamps, when in position in the person's mouth, from contacting the frenulum of the tongue;

(c) said clamp arms including stop means formed integrally therewith extending substantially transversely to said arms at a position rearwardly of said clamp for contacting the outside of the person's mouth;

(d) U-shaped spring means contacting each of said clamp arms on said second surface to urge said upper and lower clamp arms toward each other and to force said arms into rocking contact with each other; and

(e) said U-shaped spring means including a tubular extension for attachment to a flexible hose to supply a selected gas to said person.

4,198,968

POROUS SHAPED ARTICLE OF REGENERATED CELLULOSE ADAPTED FOR MEDICAL USE

Heinz Kilberer, Walluf, and Heinrich Fauth, Mainz, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,455

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1977, 2707308

Int. Cl.[2] A61B *17/11*

U.S. Cl. 128—156 **12 Claims**

1. A porous shaped article adapted for medicinal use, comprising a regenerated cellulose having a cellular structure the entire exterior surface of which is covered with a coating comprising a hydrophilizingly effective amount of at least one wetting agent and a substantially water insoluble chemically modified cellulose ether which is crosslinked carboxyl methyl cellulose or a reaction product of a partially etherified cellulose and a chemical modifying agent, which reaction product is obtained by reacting the chemical modifying agent with free hydroxy groups of the etherified cellulose in an alkaline reaction medium.

4,198,969

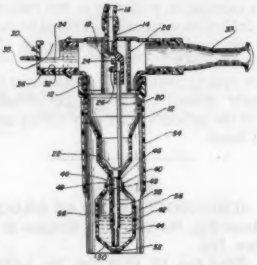
SUCTION-OPERATED NEBULIZER

Robert A. Virag, Cary, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 949,291, Oct. 6, 1978, abandoned. This application Jan. 4, 1979, Ser. No. 940

Int. Cl.[2] A61M *11/02*

U.S. Cl. 128—200.21 **17 Claims**



1. In a nebulizer for forming a liquid mist in a stream of gas, which comprises a nebulizing chamber, a gas inlet communicating with said nebulizing chamber, a liquid supply conduit within said nebulizing chamber, means for nebulizing liquid from said supply conduit into gas entering said nebulizing chamber through said gas inlet, and an outlet for nebulized gas communicating with said nebulizing chamber, the improvement comprising, in combination:

a liquid suction conduit extending from and communicating with said nebulizing chamber, means for positioning a source of liquid below said nebulizing chamber and for communicating said source of liquid with said liquid suction conduit, said liquid supply conduit defining an open lower end within said nebulizing chamber below said nebulizing means, whereby the application of suction to said outlet can cause liquid to be drawn through said

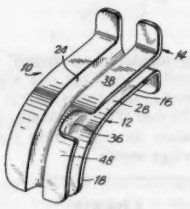
liquid suction conduit into said nebulizing chamber, to fill said chamber to the depth of said open lower end of the liquid supply conduit, to permit nebulization to occur, and upon the cessation of said suction, said liquid runs out of said nebulizing chamber through the liquid suction conduit, to reduce the level of liquid in the nebulizing chamber to expose said open lower end for terminating said nebulization.

4,198,970

AIRWAY FOR DRAINAGE OF THE NASOPHARYNX

Raymond Luomanen, 544 Bay Ridge Pkwy., Brooklyn, N.Y. 11209

Filed Sep. 11, 1978, Ser. No. 941,259
Int. Cl.² A61M *15/00, 15/06*
U.S. Cl. 128—207.15 **3 Claims**



1. An airway for insertion into the mouth and pharynx of a patient comprising:

an elongated body including a straight section joined at one end to a curved section extending downwardly from said straight section, said body having an elongate U-shaped central channel having an open top, and a pair of elongate open-sided U-shaped channels on either side of the central channel, said open-sided U-shaped channels having upper and lower defining walls, the channels being adpated for receiving tubular members inserted therein;

a transverse plate secured to the other end of said straight section, the plate being engageable over the mouth of the patient and having apertures communicating with the channels; and

the upper defining wall of one of the open-sided channels having a tube receiving opening therein disposed substantially at the juncture of said straight section with said curved section for receiving and guiding a tubular member inserted through said one channel into the nasopharynx for facilitating drainage thereof when said airway is in place.

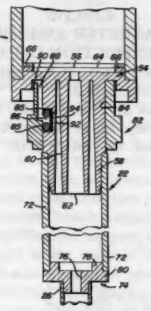
4,198,971

DRIP CHAMBER WITH AIR VENT

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Stamford, Conn.

Continuation of Ser. No. 579,584, May 21, 1975, abandoned. This application Dec. 30, 1977, Ser. No. 865,971
Int. Cl.² A61M *5/16*
U.S. Cl. 128—214 C **11 Claims**

1. An intravenous set comprising a volume limiting chamber for controlling the volume of parenteral solution administered to a patient and a drip chamber positioned downstream of said volume limiting chamber for determining the parenteral solution flow rate, said drip chamber comprising a transparent, flexible chamber, inlet means associated with one end of said transparent, flexible chamber for receiving a parenteral solution from said volume limiting chamber, said inlet means defining a drop-forming orifice for forming said parenteral solution into drops of a predetermined size, and outlet means associated with the other end of said transparent, flexible chamber, said outlet means adapted to discharge said parenteral solution from said transparent chamber, said volume limiting chamber having a membrane valve positioned in said volume limiting chamber so that all parenteral solution in said volume limiting chamber flows through said membrane valve, said membrane valve comprising a material which when wet will pass parenteral solution but will not pass air at normal intravenous administration pressures, and air vent means communicating directly with the interior of said drip chamber for selectively placing said drip chamber in communication with the atmosphere when said membrane valve is wet and said drip chamber is at least partially filled with parenteral solution, said air vent means comprising an air passage communicating directly with the interior of said drip chamber, said drip chamber, said membrane valve, and said air vent means each operable in a first mode for simultaneously evacuating a first volume of air from



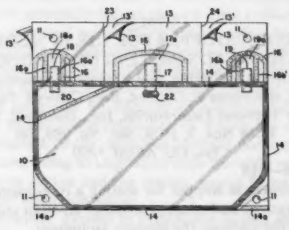
said drip chamber directly to the atmosphere without rupturing said membrane valve, and preventing parenteral solution contained in said volume limiting chamber from entering said drip chamber, each operable in a second mode for introducing a volume of parenteral solution from said volume limiting chamber into said drip chamber to substantially replace said first volume of air evacuated from said drip chamber during said first mode, and each operable in a third mode for simultaneously admitting a second volume of air directly from the atmosphere into said drip chamber, preventing parenteral solution contained in said volume limiting chamber from entering said drip chamber, and removing a volume of liquid through said outlet means, said volume of liquid being substantially equal to said second volume of air.

4,198,972

BLOOD AND BLOOD COMPONENT STORAGE BAGS

John R. Herb, Bethlehem, Pa., assignor to Pharmachem Corporation, Bethlehem, Pa.

Filed Apr. 17, 1978, Ser. No. 896,637
The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.
Int. Cl.² A61M *5/00;* A61J *1/00*
U.S. Cl. 128—214 D **17 Claims**



1. In a bag for storing blood components consisting of a

sterilizable, flexible closed polyolefin container including at least two inlets at the top thereof forming part of said closed container, each of said inlets being hermetically enclosed by a bag-like protective closure, said protective closure being integral with said bag and formed by heat-sealing under combined application of heat and pressure a portion of at least two polyolefin film members having therebetween at least one surface oxidized by corona treatment so that the seal is peelable to expose each of said inlets, the improvement which comprises a burstable seal below at least one of said inlets, said burstable seal being formed by heat sealing under combined application of heat and pressure a portion of said seal having a surface oxidized by corona treatment therebetween which is capable of breaking by the application of fluid pressure.

4,198,973

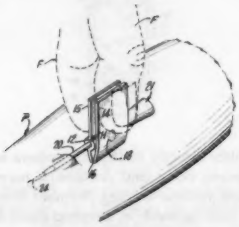
INTRAVENOUS CATHETER ASSEMBLY WITH FLUID FLOW RESTRICTION CAPABILITY

Marcus J. Millet, New York, N.Y., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 886,498, Mar. 14, 1978. This application Sep. 20, 1978, Ser. No. 944,045

Int. Cl.[2] A61M 5/00

U.S. Cl. 128—214.4 **1 Claim**



1. In combination, a needle having a sharp point at one of its ends and an intravenous catheter assembly, said catheter assembly comprising a flexible, compressible hub having a bore therethrough, a pair of generally oppositely extending flexible wing sections connected to said hub, one of said wing sections having a protuberance on one surface thereof aligned for contact with said hub when said wing section is folded over said hub, and a hollow catheter connected to said hub so that the lumen of said hollow catheter and said bore are in fluid communication, said needle slidably positioned in said bore and the lumen of said catheter so that said sharp point is adapted to extend out of a distal end of said catheter, said flexible wing sections adapted to fold toward each other so that said protuberance contacts said hub to cause said hub to compress in tight contact against said needle and thereby prevent relative movement between said needle and said catheter, said hub compression being the only means in said combination for preventing relative movement between said needle and said catheter.

4,198,974

COMBINATION STOPPER FOR USE IN MEDICAL AND CHEMICAL SAMPLING OR TESTING

Paul W. Heavner, Kettering, Ohio; Roger J. Woessner, Lindenhurst, Ill., and Susan E. Clifford, Bala-Cynwyd, Pa., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 9, 1978, Ser. No. 959,108

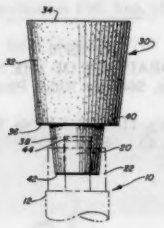
Int. Cl.[2] A61M 5/00

U.S. Cl. 128—215 **4 Claims**

1. A combination stopper for sealing a luer-tipped or a needle-tipped syringe and adapted to effect air-tight sealing of the contents of the syringe, the stopper including:

an elongated, frustoconically-shaped main body portion having oppositely disposed end walls, the end wall at the larger diameter end of the main body portion having a generally planar and continuous surface;

an elongated, frustoconically-shaped luer-receiving nipple integrally formed with and extending from the small diameter end wall of the main body portion, with the free end of the nipple being inwardly recessed;



the luer-receiving nipple being shaped, sized and constructed to provide an air-tight seal when a luer-tipped syringe is received in said recess; and

the stopper being formed of a material adapted to provide an air-tight seal when the main body portion thereof is pierced by a syringe needle.

4,198,975

SELF-INJECTING HYPODERMIC SYRINGE DEVICE

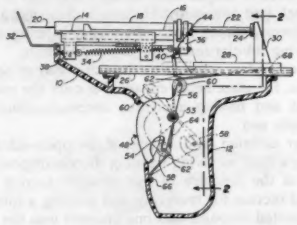
J. Gilbert Haller, 2120 New Holland Pike, Lancaster, Pa. 17601

Filed Oct. 6, 1978, Ser. No. 949,245

The portion of the term of this patent subsequent to Jan. 10, 1995, has been disclaimed.

Int. Cl.[2] A61M 5/00

U.S. Cl. 128—218 A **7 Claims**



1. A portable device for holding a loaded hypodermic syringe and effecting an instantaneous injection of the needle of the syringe into the flesh followed by operation of the plunger of the syringe, said device comprising in combination, a handle frame having forward and rearward end portions, a longitudinal guideway on said handle frame adjacent said forward end portion, a syringe slide movable along said guideway, means on said slide to support a syringe having a needle on one end and a plunger knob on the other, a spring connected between said syringe slide and handle frame, a sear engageable with said syringe slide and operable to secure the same in a retracted position in said guideway, and a handle depending from said handle frame, in combination with a trigger supported upon said handle for movement toward said handle and from the interior thereof, a second guideway upon said handle frame adjacent the rearward portion thereof and parallel to said longitudinal guideway, a plunger-operating slide movable upon said second guideway toward and from said longitudinal guideway and including means engageable with said plunger knob when moving toward said longitudinal guideway to push the plunger into the syringe, and motion-multiplying mechanism connected between said trigger element and said plunger-operating slide operable upon initial movement of said trigger

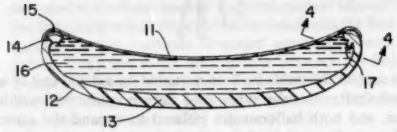
toward said handle to release said sear to effect injection of said needle into the flesh of the user, and continued movement of said trigger further actuating said motion-multiplying means to move said plunger-operating slide positively and at a substantially greater distance than the travel of said trigger toward said handle.

4,198,976

VAGINAL CONTRACEPTIVE

James L. Drobish, Wyoming, and Thomas W. Gougeon, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 11, 1977, Ser. No. 840,872
Int. Cl.[2] A61M *7/00*
U.S. Cl. 128—260 **23 Claims**



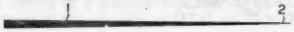
1. A contraceptive device especially adapted for use within the vaginal cavity, comprising: (1) a back which constitutes dish-shaped vaginal retaining means, said dish-shaped back forming a reservoir, said back being characterized by one or more thickened, reinforced areas; (2) a front face capping said reservoir to form a container, said front face constituting a transport surface comprising a semi-permeable membrane, said container holding; (3) a spermicide comprising an aqueous solution of a micelle-forming spermicidal surfactant compound of a concentration at or above the critical micelle concentration of said surfactant compound.

4,198,977

DENTAL THERAPEUTIC DEVICE

Yasuhiro Aoki, Hamamatsu, Japan, assignor to Teibow Company Limited, Hamamatsu, Japan

Filed Mar. 1, 1978, Ser. No. 882,075
Claims priority, application Japan, Dec. 15, 1977, 52-169306[U]
Int. Cl.[2] A61B *17/24;* A61M *1/00, 25/00;* A61C *3/00*
U.S. Cl. 433—136 **10 Claims**



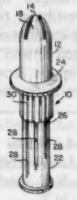
1. A device for dental therapy and examination, comprising:
an elongated, substantially rod-shaped, bundle of fibers;
said elongated bundle of fibers being provided with at least one tapered end thereof for insertion into a tooth cavity or root canal;
said bundle of fibers including a multiplicity of outer fibers and a multiplicity of inner fibers, said outer and inner fibers extending substantially in the axial direction of said bundle;
said fibers of said multiplicity of inner and outer fibers being arranged in substantially axially-coextensive parallel relation to each other;
said bundle of fibers being bonded to each other at intermittent portions along the lengths thereof to define a multiplicity of openings between said fibers, said multiplicity of openings forming capillary passageways which communicate together in the axial direction of said bundle for the absorption of liquids; and
said multiplicity of outer fibers defining a substantially smooth and coherent outer surface portion of said bundle.

4,198,978

ADJUSTABLE TAMPON INSERTER

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Sep. 29, 1977, Ser. No. 837,715
Int. Cl.[2] A61F *13/20*
U.S. Cl. 128—285 **2 Claims**



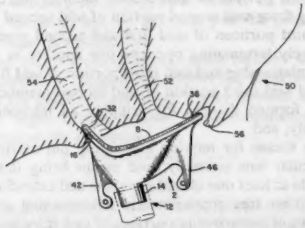
1. A tampon inserter having means for varying the depth of insertion of said tampon, said inserter comprising a cylindrical insertion tube having a proximal end and a distal end, said tube being adapted to receive a tampon in said proximal end, an outwardly extending annular ring fixedly attached to the outer surface of said insertion tube, an inwardly extending flexible finger fixedly attached to said insertion tube adjacent the distal end, an elongated plunger which is axially movable within said insertion tube for expelling the tampon, a plurality of elongated sots of varying length in the walls of said plunger, said slots being aligned lengthwise so as to be parallel to the axis of said plunger, and said insertion tube being circumferentially rotatable about said plunger whereby said finger may extend into any of said slots and thereby variably control the extent of axial travel of said plunger.

4,198,979

URINE COLLECTOR FOR WOMEN

Patricia A. Cooney, Hicksville, and Donald G. Cooney, West Islip, both of N.Y., assignors to Cooney Catheter Corporation, West Babylon, N.Y.

Filed Jun. 17, 1977, Ser. No. 807,430
Int. Cl.[2] A61F *5/44*
U.S. Cl. 128—295 **8 Claims**



1. A urine collection device for women comprising:
a one piece generally funnel shaped rigid collection means having a flanged wide orifice which orifice has a flanged lip on the upper side thereof forming a seat thereon;
sealant means composed of a layer of body adhesive having adhesive on both sides of said layer mounted in the seat;
the upper surface of the flanged wide orifice containing the sealant means being shaped to fit within the contours of the perineum cavity with the external urethral orifice of the wearer being in alignment with the wide orifice of the collection means and the sealant means being in contact with the vestibular tissue;
a narrow orifice located in opposition to said flanged wide orifice to permit urine to be removed from the funnel shaped rigid collection means;
said flanged wide orifice being capable of encompassing

both the urethral orifice and the vaginal orifice of a wearer of the device;

said narrow orifice being operably connected by tubing means to reservoir means for storing urine;

said flanged lip being so shaped that the inner surface of the labia minora of a wearer thereof are brought in contact with the underside of the flanged lip in a relationship which presses the flanged lip having sealant means thereon against the vestibular tissue of the wearer;

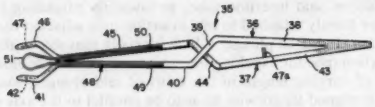
said sealant means being capable of forming a pliant viscous seal between the flanged lip and the vestibular tissue of the wearer to prevent liquids from escaping between the flanged lip and the vestibular tissue.

4,198,980

INTRAOCULAR LENS INSERTING TOOL

James A. Clark, Mendon, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 736,908, Oct. 29, 1976, Pat. No. 4,124,905.
This application Sep. 7, 1978, Ser. No. 940,422
Int. Cl.[2] A61B *17/00*; A61F *9/00*
U.S. Cl. 128—303 R **7 Claims**



1. A tool for inserting an intraocular lens assembly into an eye, comprising:

first and second members each having a first, a second and a third portion, said first portion of said first member and said first portion of said second member being flexibly engaged, said second portion of said first member angularly extending from said first portion of said first member and said second portion of said second member angularly extending from said first portion of said second member and said second portion of said first member and said second portion of said second member overlapping each other, said third portion of said first member angularly extending from said second portion of said first member, said third portion of said second member angularly extending from said second portion of said second member, said third portions of said first and second members respectively terminating opposite one another in a spaced apart relationship and said third portion of said first member and said third portion of said second member having means formed thereon for gripping an intraocular lens assembly; and

actuating means for moving a securing pin carried by an intraocular lens assembly, said means being flexibly engaged to at least one of said members and extending therefrom to an area approximately between and above the terminus of the gripping portions of said third portions to engage said pin carried by said intraocular lens assembly when said assembly is held by said gripping means and thereby move said pin from a first position perpendicular to said means to a second position when pressure is applied to said actuating means.

4,198,981

INTRAUTERINE SURGICAL DEVICE

Manfred Sinnreich, 160 Fort Hill Rd., Scarsdale, N.Y. 10583

Filed Mar. 27, 1978, Ser. No. 887,261
Int. Cl.[2] A61M *29/02, 25/00*
U.S. Cl. 128—344 **2 Claims**

1. An improved uterine insufflating device adapted to be positioned substantially entirely within the uterus of a patient, comprising: a first relatively rigid hollow shaft, a first inflatable balloon mounted on an outer surface of said first shaft between proximal and distal ends thereof; a second hollow shaft of diameter substantially less than the bore of said first shaft, sufficient to enable the introduction of a surgical instrument between said first and second shafts, and extending therethrough to project distally from the distal end of said first shaft,

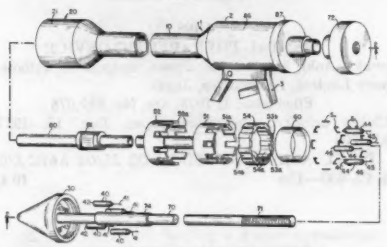
and a second inflatable balloon mounted on a distal end of said second shaft; whereby when said device is inserted within a uterus, and both balloons are inflated to expand the same, a clear generally annular interstice is formed between the balloons accessible from the distal end of said first shaft within which a surgical procedure may be performed.

4,198,982

SURGICAL STAPLING INSTRUMENT AND METHOD

Joseph G. Fortner, and Dimitrios Papachristou, both of New York, N.Y., assignors to Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,363
Int. Cl.[2] A61B *17/04*
U.S. Cl. 128—334 C **10 Claims**



1. A surgical stapling instrument for the stapling together of the free ends of two hollow organs comprising:

a. an elongated tubular body;

b. a base unit concentrically connected to the body, said base unit having a substantially cylindrical outer end portion which is positionable in one hollow organ to dispose the outer end portion thereof adjacent to the free end of the one hollow organ;

c. a head unit having a substantially cylindrical inner end portion and means mounting the head unit concentric to the body unit with the inner end thereof face-to-face with the outer end of the body unit and for relative movement with respect to the body unit over a range wherein the inner end thereof is spaced apart from the outer end of the base unit and wherein the inner end of the head unit is substantially adjacent to the outer end of the base unit, the head unit positionable in the other hollow organ when the base unit is positioned in the one hollow organ, to dispose the inner end portion thereof adjacent to the free end of the other hollow organ;

d. actuatable stapling means comprising a first portion

thereof disposed in the base unit, a second portion thereof aligned with the first portion and disposed in the head unit, the first and second stapling portions disposed concentric with the tubular body and in the annular area inward of the outer periphery of the outer and inner ends of the base and head units respectively, for stapling together the free ends of the hollow organs, upon actuation, when the base and head units are substantially adjacent;

e. means mounted on the base and head units and projecting outwardly from the outer and inner ends thereof, respectively, to extend therebetween an disposed in the annular area inwardly of the annular area of the first and second stapling portions for holding the free ends of the hollow organs inwardly of the stapling portions to maintain same in position on the base and head units during the relative movement of the base and head units toward each other and during the actuation of the stapling means;

f. actuatable cutting means having a first portion thereof disposed in the base unit and a second portion aligned with the first portion and disposed in the head unit, the first and second cutting portions disposed concentric with the tubular body and in the annular area between the holding means and the stapling means for cutting off excess tissue inwardly of the staples, upon actuation, when the base and head units are substantially adjacent; and

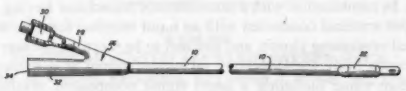
g. manual means for actuating the stapling means and the cutting means.

4,198,983

CATHETER MADE OF A THERMOPLASTIC MATERIAL HAVING IMPROVED SOFTNESS AND LOW FRICTION

Lawrence F. Becker, Chicago, and Henry M. Gajewski, Winnetka, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 28, 1978, Ser. No. 900,965
Int. Cl.[2] A61M *25/00*; C08L *43/04*
U.S. Cl. 128—349 R **13 Claims**



1. A catheter which comprises a tubular shaft, said shaft consisting essentially of (a) from 40 to 70 percent by weight of an elastic composition which comprises: from 50 to 99.5 percent by weight of a block copolymer having thermoplastic rubber characteristics with a central rubbery polyolefin block and terminal blocks of a polystyrene; said block copolymer exhibiting a Brookfield viscosity at 25° C. of 10 to 2000 cps., when measured using a 10 percent by weight solids solution in toluene, said composition including from 0 to 45 percent by weight of polypropylene, and from 0.5 to 10 percent by weight of a crosslinked, organic silicone elastomer which is the reaction product of an organopolysiloxane containing from one to five percent by weight of siloxane units which contain silicon-bonded vinyl groups, and an organopolysiloxane material containing silicon-bonded hydrogen; and (b) from 30 to 60 percent by weight of a hydrophobic oil-type plasticizer to provide the desired degree of softness to said elastic composition.

4,198,984

RETAINING MEMBER FOR A CATHETER SIDE ARM

Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Filed May 4, 1978, Ser. No. 902,646
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—349 BV **3 Claims**

1. A catheter assembly comprising,

a conduit comprising a catheter having a shaft, a side arm extending outwardly from the shaft, and valve means on the side arm actuatable by contact; and

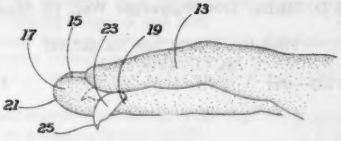
a retaining member comprising means for securing the retaining member to the conduit, means for releasably securing the retaining member to the side arm to retain the side arm in place relative to the conduit, and means for contacting the valve means when the side arm is released from the retaining member for actuation of the valve means.

4,198,985

AMNIOTOMY INSTRUMENT

Philip C. Abel, 7705 Trail Ridge, Fort Worth, Tex. 76179

Filed Feb. 12, 1979, Ser. No. 11,318
Int. Cl.[2] A61B *17/42*
U.S. Cl. 128—361 **7 Claims**



1. An improved gynecological device for rupturing an amniotic membrane during obstetrical procedures, comprising:

a glove having finger portions, each having a distal portion for enclosing the portion of the operator's fingers at and past the distal joint, and a palm portion on one side of the distal portion;

a hook member bonded to a side of one of the finger members between two finger members and in the distal portion, the hook member having a hook on one end, the hook member being bonded so that in its retracted position, the hook will not protrude past the palm portion of the finger members; and

bonding means for bonding the hook member to the finger member in a manner that allows the hook to be pushed past the palm portion of the finger member by the adjacent finger of the operator to an extended position for rupturing the membrane.

4,198,986

RADIOACTIVE-RAY COUNTING SYSTEM

Kenji Suzuki, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Inc., Kawasaki, Japan

Filed Nov. 25, 1977, Ser. No. 854,610
Claims priority, application Japan, Nov. 26, 1976, 51/141830
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—659 **10 Claims**

1. A radioactive-ray counting system comprising;

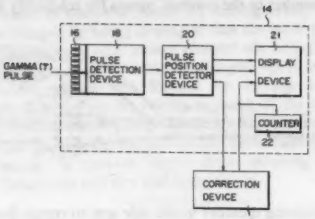
means for detecting radioactive-rays occurring at random time intervals and generating pulses in response to said detected rays;

means for counting said pulses from said means for detecting;

means for displaying data indicative of said pulses counted by said means for counting;

count-rate correcting means for inhibiting said means for counting from counting said output pulses from said means for detecting during a predetermined time interval,

said time interval being longer than the proper dead time of said means for detecting thereby correcting the non-



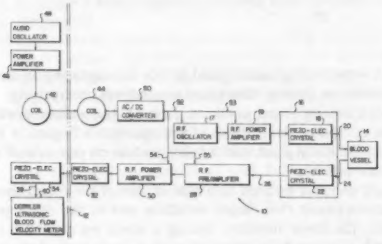
linearity of the overall count-rate characteristic of said radioactive ray counting system due to the proper dead time.

4,198,987

MEASURING SYSTEM INCLUDING ELEMENTS IMPLANTABLE BENEATH THE SKIN

Clarence P. Cain, 2870 Ludlow Rd., Cleveland, Ohio 44120, and David D. Michie, 1377 Wainwright Way, Ft. Myers, Fla. 33907

Filed Jan. 9, 1978, Ser. No. 867,891
Int. Cl.[2] A61B 5/02
U.S. Cl. 128—663 **3 Claims**



1. A system for performing blood flow measurements beneath the skin, comprising:

means, on the outside of the skin, including a first coil connectable to a power source for transmitting power through the skin at an audio frequency;

elements to be located beneath the skin, comprising:

means, including an oscillator and amplifier, for generating electrical oscillations of a selected radio frequency,

an ultrasonic blood flow probe comprised of

means, including a first piezoelectric crystal, driven by said oscillations, for radiating a blood vessel with ultrasonic vibrations at said frequency and

means, including a second piezoelectric crystal for receiving ultrasonic vibrations reflected from blood flowing in said vessel and providing an electrical signal output, analogous to the received reflected vibrations and containing information of the velocity of the blood flow,

means for amplifying said electrical signal output,

means, including a third piezoelectric crystal for radiating ultrasonic vibrations, analogous to said amplified electrical signal output, through the skin to the outside,

means, including a second coil near said first coil, for receiving said audio frequency power by electromagnetic induction, and

means for converting the received power to a direct current form and supplying said elements beneath the skin therewith; and

reception means on the outside of the skin, including a fourth piezoelectric crystal, for receiving said ultrasonic vibrations radiated to the outside and providing an external electrical signal output analogous to the outside vibrations,

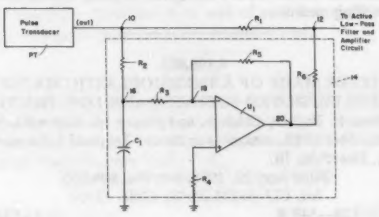
whereby said external output is analogous to said received vibrations reflected from the blood in said vessel.

4,198,988

PULSE TRANSDUCER WITH ARTIFACT SIGNAL ATTENUATOR

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Wilbur H. Cash, Jr., Littleton, Colo., and John T. Polhemus, Englewood, Colo.

Filed Jul. 26, 1978, Ser. No. 928,137
Int. Cl.[2] A61B 5/02
U.S. Cl. 128—666 **1 Claim**



1. In combination with a photoelectric transducer having an output terminal connected with an input terminal for a further signal processing circuit, and adapted to be worn on the arm of a human body for providing an output signal at a variable voltage value including a heart signal component resulting from reflection of light by blood vessels present in the arm and an artifact signal component resulting from reflection of light by the skin of the arm, an artifact signal component attenuator circuit for subtracting the artifact signal component from the output signal of the transducer, comprising:

A. a signal pick-off terminal connected to the output terminal of the transducer;

B. signal integrating means connected to said pick-off terminal for integrating the output signal of the transducer as the output signal is applied to the pick-off terminal, comprising first resistance means connected between the pick-off terminal and the output terminal of said transducer, and capacitance means having one side connected to ground and one side connected to the pick-off terminal, whereby an integrated output signal is applied to said pick-off terminal at a voltage value comprising an average value for the voltage of the transducer output signal;

C. an operational amplifier having an input connected to the pick-off terminal for providing an amplifier output signal comprising an algebraic negative of the integrated output signal; and

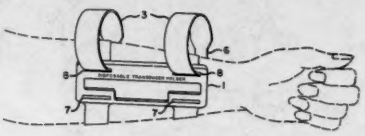
D. means for summing the voltage value of the transducer output signal with the amplifier output signal for thus unmasking the heart signal, including second resistance means connected in series between the output terminal of the transducer and the input terminal for the further signal processing circuit, and means connecting the output of the amplifier with the input terminal for the further signal processing circuit.

4,198,989

TRANSDUCER HOLDER

David Hawke, LaVerne, and M. Janet Kirkwood, Montebello, both of Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 17, 1977, Ser. No. 852,227
Int. Cl.[2] A61B 5/02; A44C 5/00
U.S. Cl. 128—675 4 Claims



1. A single piece transducer holder to secure a transducer to a limb, comprising:

(a) a generally flat, rectangularly shaped, flexible and smooth surfaced pad having an elongated depressed central area, said area having a width that varies along its length corresponding to the general outline of said transducer to hold a transducer in place on the pad and said pad including four rectangularly shaped strap slots located adjacent the corners of said pad with the slot openings aligned generally parallel to each other and generally parallel to one side of the pad,

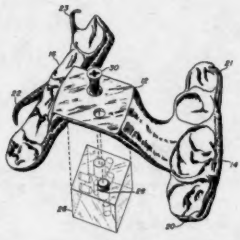
(b) two elongated straps with a cross section generally corresponding to said rectangularly shaped strap slots, said straps being of a length sufficient to surround simultaneously both the limb of a person and the width of a transducer, said straps being attached at one end to a side of said pad that is aligned parallel to said slots to form a single piece holder, said straps being threadable through said slots, and (c) means for holding said straps in a desired position with respect to said slots.

4,198,990

MOUTH MOUNTED ACCELEROMETER PACK

Aubin M. Higgins, Earlington, Ky.; James A. Fowler, Jr., Xenia; Roger W. Mercer, Fairborn, both of Ohio, and Gunter H. Kroh, Manching, Fed. Rep. of Germany, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 5, 1979, Ser. No. 17,624
Int. Cl.[2] A61B 5/10
U.S. Cl. 128—782 3 Claims



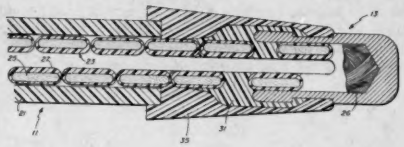
1. An apparatus for measuring head accelerations of a test subject, comprising: a metal mouthpiece adapted to be secured to the upper teeth of the test subject; means, secured to said mouthpiece, supporting three accelerometers along three orthogonal axis; means, adapted to pass between the upper and lower teeth of the test subject, for transmitting signals from said accelerometers to at least one external signal processing circuit.

4,198,991

CARDIAC PACER LEAD

Donald L. Harris, Miami Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed May 17, 1978, Ser. No. 906,981
Int. Cl.[2] A61N 1/04
U.S. Cl. 128—784 8 Claims



1. A lead for cardiac pacing comprising:

at least one thread comprising a plurality of conductive carbon filaments, said thread being terminated at the distal end of said lead in an electrode structure appropriate for contacting cardiac tissue, the filaments in said thread following parallel paths from one end of said lead to the other without threads crossing one another;

a resin matrix, a major component of which is tetrafluoroethylene, thoroughly impregnating the filaments to prevent the filaments from breaking and destructing each other during flexing of said lead;

a terminal for connection to a cardiac stimulation pulse generator circuit, said thread being conductively connected to said terminal at the proximal end of said lead; and

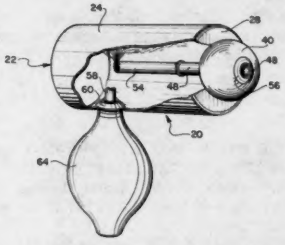
over said thread, from said electrode structure to said terminal, an insulating flexible sheath.

4,198,992

SMOKER'S APPLIANCE

Philip E. Smith, 94 Proteus St., Groton, Conn. 06340

Filed Apr. 6, 1978, Ser. No. 893,879
Int. Cl.[2] A24F 47/00
U.S. Cl. 131—171 R 6 Claims



1. A smoker's appliance comprising:

a hollow body defining a substantially airtight chamber, having a first opening adjacent one end thereof;

a closure member fittingly engageable with said body at said one end for selectively sealing the first opening and including a tubular member extending therethrough from a location outside of the chamber to a location within the chamber when said closure member is engaged with said body, said tubular member adapted to fittingly receive and hold one end of a smokeable article within the chamber;

first valve means mounted to said body at a location distant from said closure member adapted to permit the entry of ambient air into the chamber while preventing the escape of air from the chamber;

pump means mounted on said body at said first valve means for selectively pumping air into the chamber; and

second valve means integral with said pump means distant

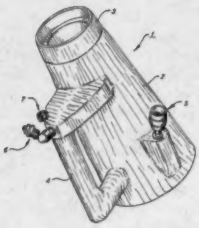
from said first valve means adapted to permit the entry of ambient air into the interior of said bulb while preventing the escape of air therefrom.

4,198,993

COMBINATION SMOKING AND DRINKING ARTICLE

Jerome E. Martin; Beverley J. Martin, both of 5540 Muckland Ave., Red Creek, N.Y. 13143, and Charles J. Emering, 220 S. Roselle Rd., Apt. 407, Schaumburg, Ill. 60172

Filed Apr. 10, 1978, Ser. No. 895,268
Int. Cl.[2] A24F *1/30*
U.S. Cl. 131—173 9 Claims



1. A combination smoking and drinking article, comprising:
(a) a first shell member forming a reservoir for holding a beverage,
(b) a second shell member intimately interfacing with said first shell member, said first and second shell members forming an enclosed smoke chamber that is securely sealed from said reservoir,
(c) smoke input means associated with said second shell member and coupled to said smoke chamber,
(d) smoke output means associated with said second shell member and coupled to said smoke chamber, said smoke chamber acting to accommodate the travel of smoke between said smoke input means and said smoke output means, and
(e) said first shell member including a heat conducting wall for conducting heat between said smoke chamber and said reservoir for providing a cooling action for said smoke.

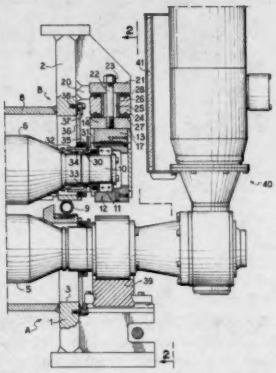
4,198,994

DEVICE FOR MOUNTING ROLLERS IN A MACHINE FOR TREATING METAL SHEETS OR THE LIKE

Alfred M. J. Germain, Grande Synthe, France, assignor to Union Siderurgique du Nord et de l'Est de la France (USINOR), Paris, France

Filed Dec. 28, 1978, Ser. No. 974,015
Claims priority, application France, Dec. 30, 1977, 77 39836
Int. Cl.[2] B08B *3/04*
U.S. Cl. 134—122 R 13 Claims

6. A device for mounting rollers in a metal sheet treating machine, and in particular a cooling machine, the machine comprising a lower frame and an upper frame and a series of rollers carried by each frame, said device comprising:
for each end of each roller of at least one series of rollers, a bearing, a support carrying the bearing, and elastically yieldable means connecting the support to the corresponding frame and allowing the bearing a vertical movement to a given extent relative to the corresponding frame;
for each roller, two sealing devices, one of which sealing devices is disposed between the roller and an element rigid with the support and ensures the seal as concerns rotation of the roller, whereas the other of said sealing devices is disposed between said element rigid with the support and an element rigid with the corresponding frame and ensures the seal while being subjected to possible movements in translation of the roller and support.

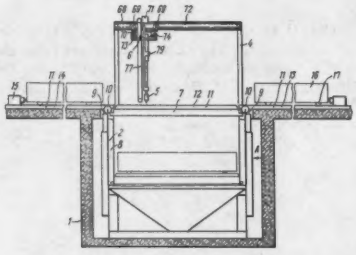


4,198,995

APPARATUS FOR ELECTROHYDROBLASTING OF CASTINGS

Alexandr G. Kachkarov; Sergei B. Rozhansky; Valentina A. Golovakhina, and Valery V. Prikhodko, all of Nikolaev, U.S.S.R., assignors to Proektno-Konstruktorskoe Bjuro Elektrogidravliki Akademii Nauk Ukrainskoi SSR, Nikolaev, U.S.S.R.

Filed Mar. 29, 1979, Ser. No. 25,006
Int. Cl.[2] B08B *3/10*
U.S. Cl. 134—133 9 Claims



1. An apparatus for electrohydroblasting of castings, comprising:
a base;
a bath mounted on said base;
means for feeding castings into the bath, comprising:
a movable platform mounted in vertical guides installed on the sides of said bath;
a drive disposed adjacent said bath;
flexible pull members through which said drive is coupled with said movable platform;
platform misalignment compensators through which said flexible pull members are connected with said drive;
a loading device comprising:
horizontal guides for conveying castings therealong, having;
a section mounted on said movable platform of said means for feeding castings into the bath;
sections mounted on the base on both sides of the bath;
a means for conveying castings along horizontal guides

which is operationally interlocked with said means for feeding castings into the bath;

an electrode set above the bath;

a device for introducing said electrode into the bath, mounted adjacent said bath;

a pulse-current generator electrically connected with said electrode.

4,198,996

PORTABLE CAMPER

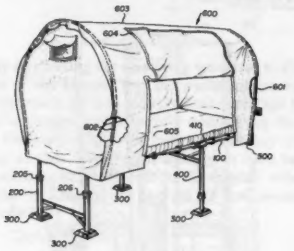
Denis Keable, 215 Horace St., and Claude Prefontaine, 103-1010 Brazier St., both of Winnipeg, Manitoba, Canada

Filed Jun. 14, 1978, Ser. No. 915,480

Claims priority, application Canada, Mar. 31, 1978, 300243

Int. Cl.[2] A45F *1/06*

U.S. Cl. 135—1 A **2 Claims**



1. A camper frame, comprising:

(a) a frame of rectangular outline comprising parallel first and second end members and two parallel side members, each of said parallel side members being of telescopic construction and being of adjustable length to permit the distance between said parallel end members to be varied;

(b) a first frame support means, upon which said first end member rests, adapted to be secured to a transportation vehicle;

(c) a second support means hingedly connected to said second end member, such that in a compressed position it lies in substantially the same plane as said frame, and in an extended position supports said second end member, said second support means comprising a plurality of tubular elements, said tubular elements being telescopically adjustable in length such that said second end member may be supported from the ground and may be maintained at the same elevation as said first end member;

(d) a plurality of rings concentrically placed over said side members of said frame;

(e) a flexible sheet of generally rectangular configuration, said sheet further characterised by

(i) fastening means at each end of said sheet for connecting the sheet to the two end members of the frame; and

(ii) a plurality of straps attachable to the sides of the sheet; and

(f) a plurality of cables for affixing said sheet to the side members of said frame by means of alternately threading said cables through said rings and said straps and affixing the ends of the cables to the end of members of the frame.

4,198,997

TENSION RIDGE TENT

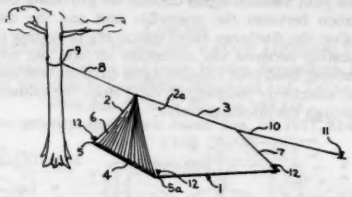
Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024

Filed Feb. 5, 1979, Ser. No. 9,826

Int. Cl.[2] A45F *1/00, 1/06, 1/08*

U.S. Cl. 135—1 R **4 Claims**

1. A tent having a generally trapezoidal floor, two congruent trapezoidal side walls contiguous at a ridge line, a front wall generally in the shape of an equilateral triangle, and a rear wall generally in the shape of an obtuse isosceles triangle;



wherein the triangular perimeter at every transverse cross-section is a constant.

4,198,998

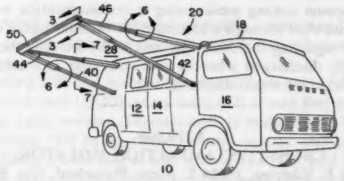
RETRACTABLE AWNING

Donald D. Duffy, 124 Seventh St., Seal Beach, Calif. 90740

Filed Nov. 29, 1978, Ser. No. 964,730

Int. Cl.[2] E04F *10/04*

U.S. Cl. 135—5 AT **13 Claims**



1. A portable vehicle awning comprising:

an awning adapted for connection to the side of a vehicle on one edge thereof;

a lead bar assembly at the opposing edge attached to said awning;

a pair of channels within said lead bar comprising a first and second chamber in elongated relationship within said lead bar;

lower bracing members hingedly connected to said lead bar in one of said chambers for support of said awning and said lead bar;

stabilizer members connected to the other of said two chambers in a hinged configuration wherein said bracing members and said stabilizer members can be folded into said respective lead bar chambers and rolled with said awning into adjacent relationship to said vehicle; and,

a pair of covers adapted for placement at either end of said lead bar connected to said vehicle for covering the ends of said lead bar and awning when in its rolled configuration and extending over said ends but not along the entire length of said awning when it is in its rolled configuration.

4,198,999

MILKING APPARATUS

Archie E. Boudreau, P.O. Box 1125, Modesto, Calif. 95353

Filed May 16, 1978, Ser. No. 906,425

Int. Cl.[2] A01J *5/00*

U.S. Cl. 137—205 **10 Claims**

1. A fluid control valve system including:

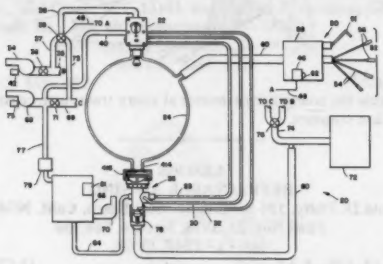
a controller unit adapted for communication with a source of vacuum and with a collection jar;

the collection jar being adapted for communication with a source of fluid, such that vacuum from the source of vacuum can draw fluid from the fluid source into the collection jar;

a discharge valve adapted for communication with the col-

lection jar, and for communication with the source of vacuum;

a first pilot vacuum signal conduit for providing communication between the controller unit and the discharge valve, the discharge valve selectively providing communication between the collection jar and the source of vacuum upon pilot vacuum signal from the controller unit for selectively discharging fluid from the collection jar through the discharge valve;



said discharge valve including vacuum sensing means for sensing when the collection jar is fully discharged, said vacuum sensing means being in communication with said controller through a second pilot vacuum signal conduit for signaling the controller unit when the collection jar is fully discharged whereby said controller unit then selectively closes said discharge valve.

4,199,000

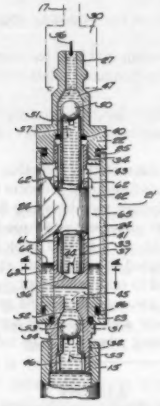
CROSS-CONTAMINATION ISOLATOR

William E. Edstrom, 28324 E. Main, Waterford, Wis. 53185

Filed Jul. 19, 1978, Ser. No. 925,918

Int. Cl.[2] A01K *7/00, 7/06*

U.S. Cl. 137—206 **5 Claims**



1. A liquid isolator to prevent crosscontimination in the supply of liquid to and between animal racks and the like, said isolator comprising an upright cylindrical tubular body having a liquid inlet at its top and a liquid outlet at its bottom, a coaxial standpipe within the tubular body and of smaller diameter than the body, said body and standpipe forming an annular cross section liquid storage chamber therebetween, a liquid entry tube within the standpipe and of smaller diameter than the standpipe to form with the standpipe an annular cross section standpipe chamber therebetween, said standpipe having base means on which the entry tube is supported, a liquid entry port at the upper end of the entry tube communicating with said liquid inlet and a liquid exit port near the lower end of the entry tube communicating with said standpipe chamber, transfer port means between the standpipe chamber and liquid storage chamber near the upper ends thereof, transfer port means between the storage chamber and the said liquid outlet near the lower end of the storage chamber, the portion of said storage chamber between the transfer port means at the upper end of the storage chamber and the level of any liquid in said chamber constituting an air lock to isolate liquid in the standpipe chamber from the liquid in the storage chamber.

4,199,001

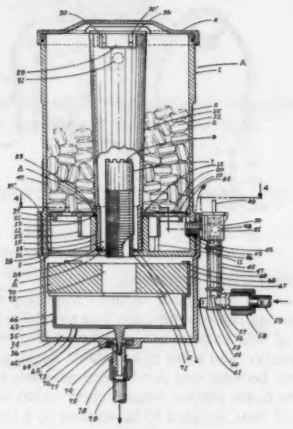
CHEMICAL FEEDER

David W. Kratz, 17 Country Life Acres, St. Louis County, Mo. 63131

Filed Apr. 24, 1978, Ser. No. 899,265

Int. Cl.[2] B01F *1/00*

U.S. Cl. 137—268 **23 Claims**



1. Apparatus for feeding liquid soluble treatment matter into a liquid circulating system comprising means defining a container, a partition dividing said container internally into an upper compartment and a lower compartment, said upper compartment receiving a supply of said liquid treatment matter supported upon said partition, means for introducing liquid solvent within said lower compartment, orifice-defining means in said partition through which liquid introduced into said lower compartment rises into said upper compartment for dissolving said treatment matter and through which means the developed liquid solution flows into said lower compartment, a vertically presented liquid-solution discharge conduit open at the upper and lower ends thereof provided in said lower compartment, said lower compartment having a bottom opening, said conduit engageable in the lower end portion thereof within said last mentioned opening, and means effecting communication between the lower compartment and the upper end of said conduit.

4,199,002

CONCRETE PUMPING APPARATUS

Enos Fumagalli, Milan, Italy, assignor to Worthington S.p.A., Milan, Italy

Filed May 10, 1978, Ser. No. 904,693

Claims priority, application Italy, May 20, 1977, 23783 A/77

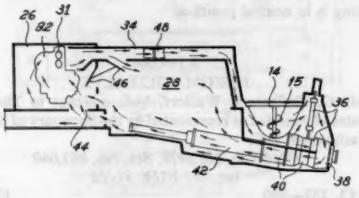
Int. Cl.[2] F16K *49/00*

U.S. Cl. 137—340 **11 Claims**

1. In an apparatus for pumping concrete, comprising a concrete loading hopper, pump means operably associated with the hopper for pumping concrete from the hopper and through

a casting tube, and an internal combustion engine for operating the pump means, said engine being the source of a current of relatively warm air;

the improvement which comprises containing means defining an enclosure wich encloses the pump means, the hopper and the engine, and further including sectional elements defining a plurality of adjustably intercommunicating bays within which the hopper, the pump means and the engine are separately disposed; duct means for con-



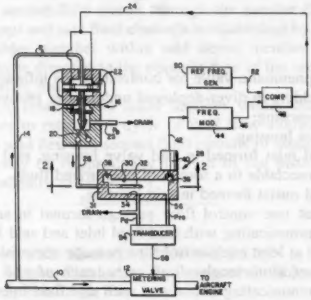
trollably circulating the relatively warm air to the exterior surfaces of the hopper and the pump means, so that the relatively warm air is in indirect heat exchange therewith; and valve means for separately controlling the air flow rate to the hopper bay, the pump means bay and the engine bay so that the air temperatures in each bay may be independently adjusted and maintanined; whereby the apparatus is adapted to operate at low environmental temperatures.

4,199,003

FLOW CONTROL SYSTEM WITH DENSITY COMPENSATION

James S. Goldsmith, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 15, 1978, Ser. No. 969,901
Int. Cl.[2] G05D *24/00*
U.S. Cl. 137—467.5 **6 Claims**



1. In a fluid metering system, an improved density compensator comprising, in combination:

regulator means operatively connected to the system for continuously sampling a portion of the fluid to be metered;

a non-magnetic housing forming a short cylindrical chamber and tangentially receiving the sampled fluid at an outer radius and axially discharging the fluid at an inner radius;

an electromagnetic means operatively connected to said housing for producing an error signal indicative of change in the tangential velocity of the sampled fluid at the outer radius, said error signal controlling the amount of fluid sampled by said regulator means; and

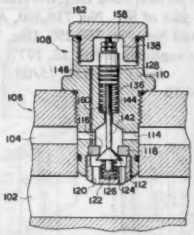
pressure differential means operatively connected to said housing for measuring the static pressure gradient at the inner and outer radii and producing an output signal to the metering system indicative of the fluid density.

4,199,004

RELIEF AND MAKE-UP VALVE ASSEMBLY

Hideo Wada, Fujisawa, and Izuru Morita, Sagamihara, both of Japan, assignors to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Jun. 9, 1978, Ser. No. 914,116
Claims priority, application Japan, Jun. 15, 1977, 52-070029
Int. Cl.[2] F16K *17/196*
U.S. Cl. 137—493 **2 Claims**



1. A relief and make-up valve assembly connecting first and second passages in a fluid pressure device, the valve assembly comprising:

a housing (10) of a hollow cylindrical form having first and second ends (11,13), an opening (12) at said first end (11), and a side opening (14) intermediate said ends (11,13), said housing (10) being closed at said second end (13) and defining a bore (34) at said second end (13), said housing (10) being connected to the fluid pressure device (6) so that said front opening (12) communicates with said first passage (2) and said side opening (14) communicates with said second passage (4);

a valve seat member (18) having a through-hole (16) and being positioned in said housing (10) between said side opening (14) and said front opening (12);

a valve holder (22) connected to said first end (11) of said housing (10);

a valve body (24) movably connected between said valve holder (22) and said valve seat member (18);

a first spring (26) connected between said valve holder (22) and said valve body (24) and biasing said valve body (24) towards said valve seat member (18) to close said through-hole (16);

a piston (28) movable in said bore (34) of said housing (10) and partitioning said bore (34) into first and second chambers (36,38);

a plunger (42) slidingly movable in said housing (10) and extending generally between said piston (28) and said valve body (24);

a second spring (44) connected between said piston (28) and said housing (10) and biasing said piston (28) away from said valve seat member (18);

a third passage (46) connecting said first passage (2) with said second chamber (38), said third passage (46) extending through said housing (10), said piston (28) and said plunger (42) moving said valve body (24) away from said valve seat member (18) against the force of said first and second springs (26,44), opening said through-hole (16) in response to a preselected pressure in said first passage (2), said valve body (24) moving away from said valve seat member (18) against the force of said first spring (26) in response to a preselected pressure difference in said first and second passages (2,4) acting across the valve body (24) and when said first passage (2) has a pressure below that of said second passage (4);

a set-screw member (30) having an extending portion (32),

said extending portion (32) defining said bore (34) therein, and said set-screw member (30) being sealingly received within said housing (10) and being adjustable along the length of said housing (10); and

a plug (40) connected to said extending portion (32), said plunger (42) extending slidingly through said plug (40) between said piston (28) and said valve body (24), said second spring (44) being confined between said plug (40) and said piston (28).

4,199,005

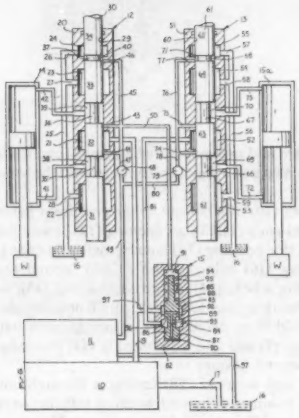
LOAD RESPONSIVE CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 716,360, Aug. 20, 1976, Pat. No. 4,107,923, and Ser. No. 750,250, Dec. 13, 1976, Pat. No. 4,089,346. This application Jul. 25, 1977, Ser. No. 818,464

Int. Cl.[2] F15B *13/08*

U.S. Cl. 137—596.13 **2 Claims**



2. A valve assembly having a first housing and other housings forming a multiple housing assembly each having an inlet chamber, a load chamber subjected to load pressure, and an exhaust chamber connected to system reservoir, valve bore means in each housing interconnecting said chambers and axially guiding a valve spool means movable from a neutral position to at least one actuating position, load sensing port means selectively communicable with said load chamber by said valve spool means, load sensing port unloading means for selectively interconnecting said load sensing port means with said exhaust chamber by said valve spool means in neutral position of said valve spool means, control pressure passage means interconnecting said load sensing port means of all of said housings, check valve means interposed between said control pressure passage means and each of said load sensing port means and said load sensing port unloading means to permit fluid flow from said load sensing port means to said control pressure passage means and to block reverse flow from said control pressure passage means, pump means operable to supply fluid to said inlet chambers through discharge flow passage means, flow control means responsive to pressure signal in said control pressure passage means and operable to vary fluid flow delivered from said pump means to said inlet chambers to maintain a constant pressure differential between fluid pressure delivered by said pump and said load chamber subjected to highest load pressure when said inlet chambers and said load chambers are interconnected by said valve spool means, and priority flow control means in said discharge flow passage means interconnecting said pump means and said inlet chambers of said other housings, said priority flow control means having fluid throttling means between said pump means and said other housings, said fluid throttling means having connecting means, first means responsive to pressure in said load sensing port means and said load sensing port unloading means of said first housing, said first means having unloading passage means operable to connect said fluid throttling means to said load sensing port unloading means of said first housing upstream of said check valve means, and second means responsive to pressure in said discharge flow passage means, whereby said priority flow control means will connect by said connecting means said pump means with said inlet chambers of said other valve means when said valve spool means of said first housing is in neutral position.

4,199,006

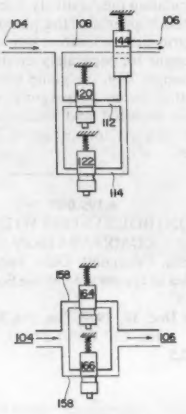
PNEUMATIC VALVE

Arnold G. Thalhamer, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1978, Ser. No. 882,040

Int. Cl.[2] F16K *31/12*

U.S. Cl. 137—599 **17 Claims**



1. A pneumatic valve for controlling the inflation of floatation bladders in diver-deployed underwater recovery apparatus, comprising:

a valve housing,

a fluid inlet formed in said valve housing, said inlet being connectable to a source of pressurized fluid,

a fluid outlet formed in said housing,

at least one control flow passage formed in said housing communicating with said fluid inlet and said fluid outlet, said at least one control flow passage comprising a plurality of semi-circular flow paths, each of said flow paths communicating at one end with said fluid inlet and at the other end with said fluid outlet,

spring-loaded control piston means displaceably mounted within and normally closing said control flow paths,

control flow regulating means comprising a circumferential groove formed in said control piston means,

means for actuating said pneumatic valve, and

at least one floatation bladder in fluid communication with said fluid outlet,

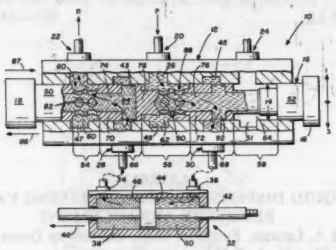
whereupon displacement of said control piston means and said control flow regulating means in said control flow paths by said means for actuating said pneumatic valve allows fluid from said source of pressurized fluid to flow from said fluid inlet through said control flow regulating means to said fluid outlet, thereby allowing said floatation bladder to be pressurized.

4,199,007

HIGH FREQUENCY-HIGH FLOW SERVO VALVE

Lloyd H. Holmes, Salt Lake City, Utah, assignor to E-Systems, Inc., Dallas, Tex.

Filed Feb. 27, 1978, Ser. No. 881,660
Int. Cl.[2] F15B 13/04
U.S. Cl. 137—625.17 13 Claims



1. A servo valve having a slider member disposed for rotational and lateral movement within a sleeve member for alternating the direction of flow of a hydraulic fluid from a fluid power source through entry and exit ports within the sleeve member to motor control ports within the sleeve member to establish a set frequency of fluid flow for controlling a reciprocating piston of a hydraulically driven motor, wherein the improvement comprises:

a plurality of chambers formed within said slider member, said chambers having first and second flow ports to provide fluid passageways through said chambers, such that a first fluid circuit is established from the fluid power source through said fluid passageways to one face of the reciprocating piston;

reduced diameter sections formed on said slider member;

increased diameter fluid sealing sections formed on said slider and disposed between said reduced diameter sections, such that annular fluid passageways are formed between the slider member and the sleeve member;

fluid channels spaced about said fluid sealing sections such that a second fluid circuit through the annular fluid passageways and said fluid channels is established by rotating said slider member within said sleeve member causing fluid to be directed to the opposite face of the reciprocating piston; and

means for rotating said slider member within said sleeve member to establish a cycle of fluid flow alternating between said first and second fluid circuits to establish a set frequency of reciprocating motion to the piston of the hydraulically driven motor.

4,199,008

WET SEALED STANDPIPE CAP

Robert H. Bright, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 12, 1978, Ser. No. 914,629
Int. Cl.[2] F16C 35/00
U.S. Cl. 137—800 4 Claims

1. A coke oven standpipe cap seal, operable in a range of about 1500° to 1800° F., comprising:

(a) a refractory-lined ascension pipe;

(b) a gooseneck pipe connected to said ascension pipe and forming an extension thereof;

(c) a cleaning aperture, posed in a horizontal plane, and extending into said ascension pipe adjacent said gooseneck pipe;

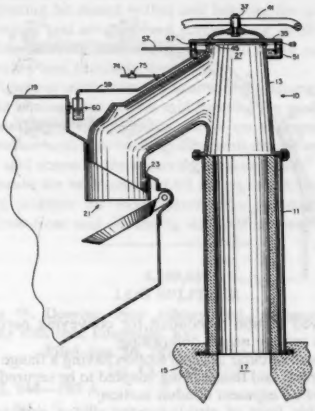
(d) a vertical collar surface surrounding said aperture;

(e) a lip surface, integral with said collar surface, and forming the upper terminus of said collar surface;

(f) a water ring, fixed to and surrounding the exterior of said ascension pipe adjacent to said collar surface and forming a liquid containing canal therewith;

(g) a cap means, operable in conjunction with said cleaning aperture to close off said cleaning aperture;

(h) a first baffle ring, mounted to said cap means, corresponding to said lip surface by forming contact therewith when said cap means is operated to close of said cleaning aperture;



(i) a second baffle ring, surrounding said first baffle ring mounted to said cap means, positioned to interject into, and concentrically divide, said liquid containing canal;

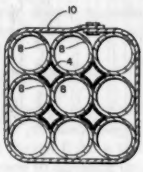
(j) means for continuously conducting a liquid into said liquid containing canal such that a portion of said second baffle ring is submerged therein when said cap means is operated to close said cleaning aperture.

4,199,009

CONDUIT SADDLE

Leslie F. Ballone, River Forest, Ill., assignor to Kyova Corporation, Columbus, Ohio

Filed Jul. 6, 1976, Ser. No. 702,884
Int. Cl.[2] F16L 9/18, 9/20
U.S. Cl. 138—112 4 Claims



1. A saddle for supporting a plurality of circular conduits of equal exterior diameter, 2 r, comprising in cross section a figure having four external concave sides, each side describing an arc of less than 90 degrees and having a constant radius r equal to one half the exterior diameter of said circular conduits, and having a width as measured across the mid part of two opposing sides of $(\sqrt{2}-1)\times 2r$.

4,199,010

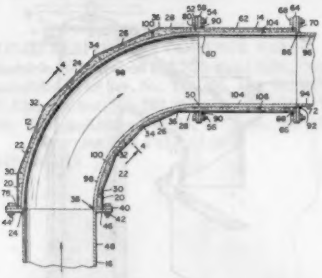
CERAMIC LINED CONDUIT

Joseph C. McGuth, Chatham, and Edwin J. Przetak, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jun. 2, 1978, Ser. No. 911,859

Int. Cl.[2] F16L *9/14*

U.S. Cl. 138—140 **4 Claims**



1. A curved section of conduit for conveying particulate matter of an erosive nature comprising;

an outer wall circular in cross section having a flange at one end thereof, said flange being adapted to be secured to the flange of an adjacent conduit section;

a monolithic liner of nitride-bonded silicon carbide, said liner being circular in cross section and positioned coaxially within said outer wall; and

refractory filler material positioned between said outer wall and said liner.

4,199,011

SLEEVE FOR DRILL PIPES

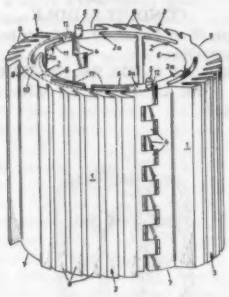
Gunter Kreft, Melle, and Helmut Husser, Damme, both of Fed. Rep. of Germany, assignors to H. Niemeyer GmbH, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,613

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812181

Int. Cl.[2] F16L *57/00*

U.S. Cl. 138—157 **10 Claims**



1. A protective sleeve for drill pipes used for the drilling of deep wells in the ground for the recovery of oil, natural gas and other fuels, the sleeve being attachable in the connection area of the individual drill pipe rods and comprising:

(a) two half shells adapted to be releasably hinged together to form a closed ring, each shell having a springy inner part in the form of a ring part and a protective covering of a resilient material surrounding the inner part,

(b) at least one tension claw formed on the internal surface of the inner part, each claw having a convex contact surface having a radius of curvature different from the radius of the drill pipes in order to provide a clamp connection between the protective sleeve and the rods, and

(c) at least two resilient segments formed on the external surface of the protective covering to provide protection for the pipes during use.

4,199,012

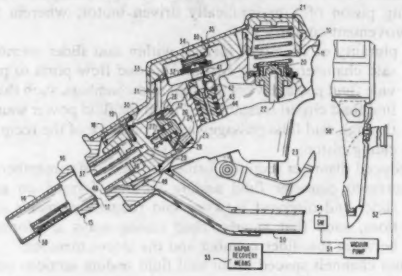
LIQUID DISPENSING NOZZLE HAVING VAPOR RECOVERY ARRANGEMENT

Donald A. Lasater, Fairfield, Ohio, assignor to Dover Corporation, New York, N.Y.

Continuation of Ser. No. 734,522, Oct. 21, 1976, abandoned, which is a continuation of Ser. No. 567,597, Apr. 14, 1975, abandoned, which is a continuation of Ser. No. 394,184, Sep. 4, 1973, abandoned. This application Nov. 7, 1977, Ser. No. 849,498

Int. Cl.[2] B65B *3/18*

U.S. Cl. 141—52 **8 Claims**



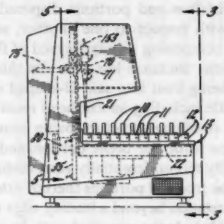
1. A liquid dispensing nozzle having a body and a spout extending from said body and having its free end for disposition in nonsealing manner in the opening of a fill pipe of a tank or the like, the improvement comprising an inner tube and an outer tube spaced from and concentric with said inner tube, said inner tube and said outer tube defining the spout, said inner tube being in communication with a source of liquid to allow liquid to flow from said body, said outer tube external diameter being less than the inner diameter of the fill pipe thereby permitting air-flow between the inner surface of the fill pipe and the outer surface of said outer tube when each of said inner tube and said outer tube of said spout is disposed in the fill pipe, said inner and outer tubes further defining an annular passage therebetween, vapor return means within said body in communication with one end of said annular passage, the other end of said annular passage extending axially into the fill pipe, vacuum means communicating with said vapor return means to cause air to flow into the fill pipe around the outer surface of the portion of said outer tube within the fill pipe when each of said inner tube and said outer tube of said spout is disposed in the fill pipe to dispense liquid into the tank through said inner tube to form an air seal within the fill pipe thereby preventing vapor escape from the fill pipe into the atmosphere wherein said vacuum means causes all vapor from the tank during filling and air drawn into the fill pipe to exit from the tank fill pipe through said annular passage and said vapor return means to vapor recovery means or the like, separate from the source of liquid.

4,199,013

LIQUID SAMPLE ASPIRATING AND/OR DISPENSING SYSTEM

Andrew R. Reich, and Leroy J. Everett, both of Glen Ellyn, Ill., assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Apr. 1, 1977, Ser. No. 783,795
Int. Cl.[2] B65B *43/42*; B67C *3/00*; B67D *5/52*
U.S. Cl. 141—130 **12 Claims**



1. A pipetting system for dispensing multiple liquids into a single receptacle, said system comprising the combination of

a plurality of internal liquid reservoirs holding a plurality of different reagents,

an internal reservoir of buffer liquid,

a plurality of syringes each of which is connected to one of said internal reservoirs for aspirating and dispensing preselected volumes of said reagents and said buffer liquid,

a sampling syringe for aspirating a preselected volume of an external liquid sample,

a common dispensing/aspirating head connected to all of said syringes for receiving the aspirated sample from an external source and for simultaneously dispensing said sample and said plurality of reagents,

a plurality of switchable valves each of which is connected to one of said syringes for selectively connecting said syringes to the respective reservoirs or to said dispensing-/aspirating head, and means for switching said valves at preselected positions of the syringes, and

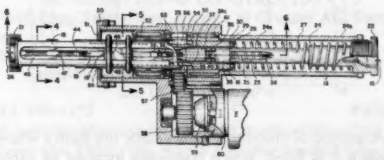
means for operating said syringes in unison for simultaneously aspirating said reagents and sample and then simultaneously dispensing said preselected volumes of the reagents and sample.

4,199,014

AUTOMATIC FEEDING SCREWDRIVER

Kenneth E. Nickle, 5131 Mountain Man Dr., Kearns, Utah 84118

Filed Mar. 2, 1978, Ser. No. 882,651
Int. Cl.[2] B26D *85/24*; B25B *23/04*
U.S. Cl. 144—32 R **28 Claims**



1. Automatic screw driver apparatus including:

(a) a flexible string of screws comprising a plurality of screws attached in head to tip orientation to a length of flexible retaining means which provides flexibility between a preceding screw head and a following screw tip, said retaining means being severable in response to a separating force applied prior to emplacement of said screw into a receiving medium;

(b) a driver housing having an elongate channel along its length with receiving and dispensing openings within said channel for guiding said string of screws into a position for emplacement;

(c) feed means located within said housing for advancing said string of screws therethrough;

(d) means within said housing for severing said retaining means between a lead screw and remaining screws of said string of screws;

(e) rotating bit means within said housing for engaging and rotating said severed lead screw along its threaded axis while moving said screw forward along said channel toward said receiving medium;

(f) alignment means located near said dispensing opening of said channel and within said housing for positioning and maintaining said engaged screw on a common axis of rotation with said rotating bit means during emplacement of said screw in the receiving medium; and

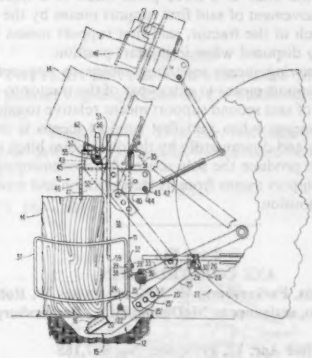
(g) means for returning said bit means to a rearward engaging position for engagement of a subsequent severed screw from said advancing string of screws.

4,199,015

LOG SPLITTER

Charles W. Doering, New Albany, Ind., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.

Filed Jun. 14, 1978, Ser. No. 915,561
Int. Cl.[2] B27L *7/00*
U.S. Cl. 144—193 A **8 Claims**



1. A log splitter including:

first support means;

second support means to support one end of a log to be split;

first mounting means to mount said second support means on said first support means for movement relative thereto;

said first mounting means including means to pivotally mount said second support means on said first support means;

log splitting means engageable with the other end of the log to be split;

second mounting means to mount said log splitting means on said first support means; moving means to move said second support means from a start position toward said log splitting means to advance the log to be split relative to said log splitting means to cause said log splitting means to be driven into the log to be split to cause splitting thereof and to return said second support means to its start position upon completion of movement away from its start position, said moving means moving said second support means independently of the position of said log splitting means;

locking means, operable independently of said moving means and separate from said moving means, to prevent

movement of said log splitting means away from said second support means when said second support means is being moved from its start position toward said log splitting means while allowing movement with the log to be split of said log splitting means toward said second support means when said second support means returns to its start position;

said locking means including means to lock said log splitting means to said first support means during movement of said second support means toward said log splitting means;

said locking means including:

first means mounted on said first support means;

second means mounted on said log splitting means and engageable with said first means, said second means being supported solely by said log splitting means;

said first and second means having cooperating means to lock said second means to said first means against movement in the direction in which said log splitting means would be moved when said second support means is moved from its start position toward said log splitting means while allowing movement of said log splitting means when said second support means returns to its start position due to said log splitting means being wedged in the log being split;

said first means comprising at least one ratchet track;

and said second means comprising at least one spring biased pawl with the number of said pawls being equal to the number of said ratchet tracks and each of said pawls engaging a different one of said ratchet tracks;

said first support means including means for connection to each of the links of a three point hitch of a tractor to enable movement of said first support means by the three point hitch of the tractor, said first support means being vertically disposed when in its start position;

and said moving means including means to connect said second support means to a drawbar of the tractor to cause pivoting of said second support means relative to said first support means when said first support means is moved upwardly and downwardly by the three point hitch of the tractor to produce the sole source for movement of said second support means from its start position and return to its start position.

4,199,016

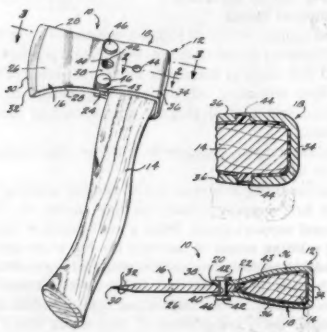
AXE CONSTRUCTION

Harold O. Eads, Parkersburg, W. Va., and James W. Robison, Belpre, Ohio, assignors to McDonough Co., Parkersburg, W. Va.

Filed Apr. 17, 1978, Ser. No. 897,165

Int. Cl.² B26B *23/00*

U.S. Cl. 145—2 R **9 Claims**



1. In an axe comprising a blade formed of flat plate stock of generally uniform thickness, said blade including a handle attaching portion having a trailing edge facing in one direction and side edges extending from said trailing edge in a generally opposed direction and a cutting portion having side edges extending from the side edges of said attaching portion and a sharpened cutting edge facing in said generally opposed direction extending between said side edges, the cutting edge of said blade being of uniform wedge-shaped cross-sectional configuration throughout its extent, the wedge shape being formed by generally straight bevel surfaces, a handle attaching structure of generally U-shaped configuration, said handle attaching structure including a bight portion and a pair of leg portions converging with respect to one another from said bight portion and terminating in free end portions disposed generally in parallel relation with respect to one another, said handle attaching structure comprising a strap formed of flat plate stock of generally uniform thickness less than the thickness of said blade, said strap being bent into said U-shaped configuration, an elongated handle including an axe head receiving end portion, said handle attaching structure being mounted on said handle end portion with the bight portion and leg portions thereof substantially circumferentially surrounding the handle end portion and the free end portions thereof extending in said generally parallel relation beyond a leading edge of said handle end portion, said blade being mounted with its attaching portion disposed between the free end portions of said handle attaching structure and the trailing edge thereof facing the leading edge of said handle end portion and mechanical fasteners rigidly securing said blade and said strap together in mounted relation on said handle end portion,

the improvement which comprises an adhesive filling the annular spaced defined exteriorly by the trailing edge of said blade and the interior surfaces of the leg portions and bight portions of said strap and interiorly by the exterior periphery of said handle end portion, said adhesive being peripherally compressed in surrounding relation with the exterior periphery of said handle end portion when opposed forces are applied to said free end portions of said strap by said mechanical fasteners.

4,199,017

TIRE REMOVAL APPARATUS

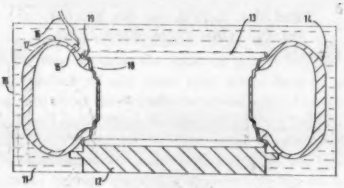
Eric H. Searle, Sutton Coldfield, England, assignor to Dunlop Limited, England

Filed Jan. 25, 1978, Ser. No. 872,313

Claims priority, application United Kingdom, Jan. 25, 1977, 2884/77

Int. Cl.² B60C *25/00*

U.S. Cl. 157—1.1 **6 Claims**



1. A method of dislodging a pneumatic tire from a wheel rim on which it is fitted, which comprises locating an explosive charge adjacent said tire, interposing a tool having an arcuate shape with a radius corresponding to the tire between the explosive charge and the tire, in contact with the tire, immersing said tire and wheel in a fluid medium, detonating said charge while in said fluid medium to produce a force against the tire sidewall adjacent the bead sufficient to dislodge said tire but insufficient to damage said tire or said wheel; and controlling the force generated by the detonation to direct a substantial part of said force against the tire.

4,199,018

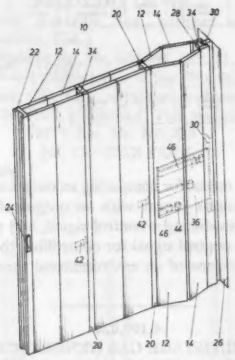
FOLDING PARTITION SHIFTABLY SUSPENDED FROM A CEILING

Adolf Hirschel, Schonbergerweg 17, and Horst Böhm, Unter den Eschen 9, both of 6 Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 26, 1978, Ser. No. 852,021

Int. Cl.[2] A47H *5/00*

U.S. Cl. 160—84 R **8 Claims**



1. A shiftably suspended folding partition made of folding sections which are hinged to each other for folding and unfolding, with a space being provided for receiving the folded sections upon retracting the partition and with a control mechanism for actuating the folding sections, characterized in that while closing the partition or door **(10)**, the control mechanism causes the folding sections **(12, 14)** to straighten out, and while opening the partition door **(10)**, the control mechanism causes the folding sections **(12, 14)** to fold the control mechanism comprising a cam plate **(36)** having two control cams **(44, 46)** for each folding section pair **(12, 14)**, with one of the control cams **(46)** cooperating with a control lug **(42)** for holding the folding section pairs **(12, 14)** unfolded, and one of the control cams **(44)** cooperating with the control lug **(42)** for folding the folding section pairs **(12, 14)**, the control lug **(42)** being provided on each of the folding section parts **(14)** at the side of the receiving space **(50)**, the control cams **(44,46)** and thecontrol lugs **(42)** of each of folding section pairs **(12, 14)** being offset vertically relative to each other, in a manner such that each folding section **(12, 14)** is associated with control cams **(44, 46)** of its own which are offset relative to each other in the horizontal direction, so as to positively cause a sequential unfolding or folding of the folding section pairs **(12, 14)** upon actuating the partition or door **(10)**.

4,199,019

VENETIAN BLIND CONSTRUCTION

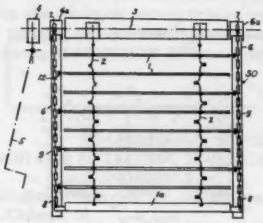
Paul Frei, Elgg, Switzerland, assignor to Griesser AG, Switzerland

Continuation of Ser. No. 829,658, Sep. 1, 1977, abandoned. This application Dec. 5, 1978, Ser. No. 966,611

Int. Cl.[2] E06B *9/30*

U.S. Cl. 160—172 **9 Claims**

1. A venetian blind construction for the operation of raisable and lowerable blind slats, which are interconnected by supporting elements, between a first position in which the blind slats are fully lowered and a second position in which the blind slats are fully raised, comprising a pair of housings, a rotatable sprocket wheel rotatably mounted in each of said housings, a pair of open ended sprocket chains having two ends, each chain defining a pull member for the blind slats, each chain having one end adapted to be connected to one end of the lowermost slat and an opposite end being engaged over one side of each of said sprocket wheels and being movable by said sprocket wheels to raise and lower said blind slats, each of said opposite ends of said open sprocket chains extending by at least one chain link beyond an opposite side of each of said sprocket wheels respectively between said first and second positions, each of said housings having first and second chain guide passage portions and a housing portion overlying said sprocket wheel mounted in said housing for guiding one of said sprocket



chains toward and away from said sprocket wheels respectively, in a defined trackway and preventing said chain from buckling out said trackway, each of said chains having a length, in the first position in which the blind slats are fully lowered, at most slightly greater than the height of the fully lowered venetian blind.

4,199,020

PATTERN DEVICE FOR FOUNDRY MOLDS

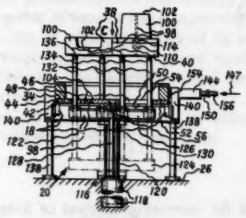
Erwin Bührer, Vögelingässchen 40, CH 8200Schaffhausen, Switzerland

Filed Oct. 27, 1978, Ser. No. 955,345

Claims priority, application Switzerland, Oct. 31, 1977, 13199/77

Int. Cl.[2] B22C *7/04*

U.S. Cl. 164—146 **7 Claims**



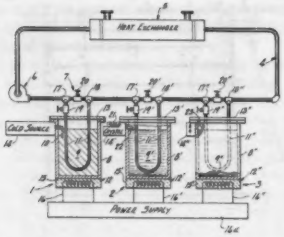
1. Mold forming apparatus comprising pattern means adapted to have a mold portion formed thereon; carrier means upon which said pattern means are supported; means defining a mold separation station including means for separating a formed mold portion from said pattern means; means defining a pattern means exchange station; transfer means for moving said pattern means and said carrier means between said mold separation station and said exchange station; lifting means including a plurality of extraction pins located at said exchange station for moving said pattern means relative to said carrier means; said carrier means being formed with a bottom member upon which said pattern means is supported; and means defining openings through said bottom member of said carrier means; said extractor pins extending through said openings in said bottom member to engage said pattern means to effect lifting and lowering of said pattern means upon actuation of said lifting means.

4,199,021

THERMAL ENERGY STORAGE APPARATUS

Paul E. Thoma, Burlington, Wis., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Nov. 24, 1976, Ser. No. 744,695
Int. Cl.[2] F28F *21/00*
U.S. Cl. 165—1 9 Claims



1. In the method of storing and charging of thermal energy in an apparatus having fluid exchange means coupled to the apparatus, comprising the improvement in the use of an organic supercoolable material having a significant level of supercooling in the liquid state, said material being an organic material having three dimensional molecular structure including a charge pocket and a mating projection of different electronegativity establishes a strong stable liquid state, and selectively initiating the nucleation of the supercooled liquid and freezing of the supercooled liquid with a rate of nucleation and release of heat in excess of the normal rate of dissipation of the heat.

4,199,022

METHOD OF FREEZING LIVING CELLS AND TISSUES WITH IMPROVED SUBSEQUENT SURVIVAL

Selim M. Senkan, and Gerald P. Hirsch, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 8, 1978, Ser. No. 967,748
Int. Cl.[2] F25B *13/00*
U.S. Cl. 165—2 7 Claims

1. A method for increasing survival of living cells taken through a freezing-thawing sequence comprising the steps of placing a sample of said cells in a freezing vessel capable of withstanding rupture when completely filled and sealed; rapidly cooling said filled, sealed vessel to a temperature of about −78° C. at constant volume; and rapidly heating said vessel to a temperature of about 37° C. to thaw said cells, whereby the constant-volume freezing and thawing substantially increase the cell survival compared with conventional constant-pressure freezing and thawing.

4,199,023

HEAT DEMAND REGULATOR

Chester C. Phillips, 4310 Frankfort Dr., Rockville, Md. 20853

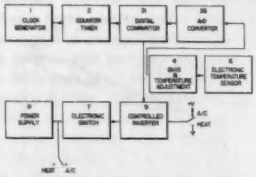
Filed Nov. 4, 1977, Ser. No. 848,669
Int. Cl.[2] F25B *29/00*
U.S. Cl. 165—12 13 Claims

1. An environmental temperature control system regulator, comprising:

a clock means for producing a continuous series of electrical pulses;

a counter means responsive to said clock for producing a plurality of timing pulses in response to a predetermined number of said series pulses;

temperature responsive means for producing a digital signal;



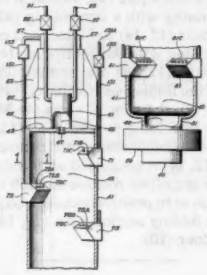
a comparator means for comparing an output of said temperature responsive means with an output of said counter means for producing a control signal; and means responsive to said control signal for controlling the temperature modifying means of an environmental temperature control system.

4,199,024

MULTISTAGE GAS GENERATOR

Leslie C. Rose, Rocky Mount, and Joseph T. Hamrick, Roanoke, both of Va., assignors to World Energy Systems, Fort Worth, Tex.

Continuation of Ser. No. 886,105, Mar. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 756,129, Jan. 3, 1977, Pat. No. 4,078,613, which is a continuation of Ser. No. 602,680, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 534,778, Dec. 20, 1974, Pat. No. 3,982,591. This application Jan. 18, 1979, Ser. No. 4,457
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—59 14 Claims



1. A system for recovering hydrocarbons or other materials from underground formations penetrated by a borehole comprising:

a gas generator including,

means defining a main chamber having an upper end and a lower outlet for the passage of heated gases,

a pilot stage disposed at the upper end of said gas generator and including a pilot chamber having a restricted outlet communicating with said main chamber,

a plurality of spaced apart intermediate stages located between said pilot stage and said lower outlet,

a predetermined number of said plurality of intermediate stages including fuel and oxidizing fluid nozzles communicating with said main chamber,

means adapting said gas generator for insertion into a borehole to a level adjacent underground formations penetrated thereby;

means for supplying fuel and an oxidizing fluid to said pilot chamber for ignition therein; and,

means for supplying fuel and an oxidizing fluid to each of said predetermined number of said intermediate stages for injection into said main chamber through the fuel and oxidizing fluid nozzles, respectively, for ignition at a plurality of spaced apart zones.

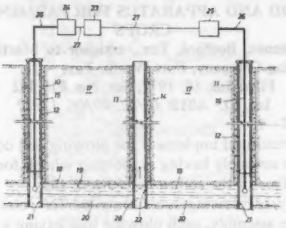
4,199,025
METHOD AND APPARATUS FOR TERTIARY RECOVERY OF OIL

Neil L. Carpenter, Kerrville, Tex., assignor to Electroflood Company, Houston, Tex.

Continuation-in-part of Ser. No. 624,391, Oct. 21, 1975, Pat. No. 4,037,655, which is a continuation of Ser. No. 462,326, Apr. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 228,846, Feb. 24, 1972, abandoned. This application Jun. 17, 1977, Ser. No. 807,739

Int. Cl.² E21B *43/24*

U.S. Cl. 166—248 **120 Claims**



1. A method of generating gases in situ in a fluid-bearing earth formation, comprising the steps of

establishing at least two spaced-apart boreholes extending into a subsurface earth formation containing both oil and an electrolyte dispersed therein,

disposing a separate electrode in each of said boreholes and into electrical contact with said oil and electrolyte in said formation,

insulating said electrodes from substantially all earth materials adjacent said boreholes and lying above said subsurface earth formation to establish an electrical circuit composed of said insulated electrodes and said formation electrolyte,

establishing an AC electrical current flow in said electrical circuit composed of said insulated electrodes and said formation electrolyte lying therebetween for establishing a current density in the formation exceeding the minimum current density required to cause AC disassociation of the electrolyte, and

electrochemically generating free gases, at least one constituent of which is hydrogen, in said subsurface earth formation between said boreholes as a function of current density in said formation exceeding said minimum current density.

68. Apparatus for increasing the formation pressure of an oil bearing subsurface earth formation, comprising

at least two spaced boreholes drilled into the earth formation containing both oil and an electrolyte dispersed therein,

a plurality of electrodes, one each of which is disposed in each of said boreholes and into electrical contact with said oil and electrolyte in said subsurface earth formation,

casing of electrically insulating material set into each borehole for insulating said electrodes from substantially all earth materials adjacent said boreholes and lying above said subsurface earth formation to establish an electrical circuit composed of said insulated electrodes and said formation electrolyte,

a source of an AC electrical current connected to each of said electrodes for establishing an AC current in said electrical circuit composed of said insulated electrodes and said formation electrolyte lying therebetween,

means cooperating with said source of AC current for establishing an AC current density in the formation exceeding the minimum current density required to cause AC disassociation of said electrolyte and electrochemically generate free gases, at least one constituent of which is hydrogen, in said subsurface earth formation between said boreholes as a function of current density in said formation exceeding said minimum current density, and

means for trapping said generated gasses in said formation for increasing the formation pressure acting on the oil therein.

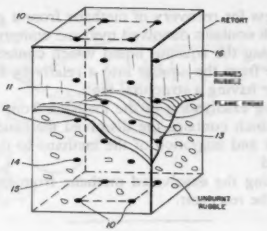
4,199,026
METHOD FOR DETECTING UNDERGROUND CONDITIONS

John D. McCollum, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,178

Int. Cl.² E21B *43/24, 47/06, 47/12*

U.S. Cl. 166—251 **13 Claims**



1. In the in situ combustion of a subterranean carbonaceous stratum, a method for detecting a flame front comprising

(a) providing one or more radio transmitters below the surface of the ground wherein one or more of said transmitters is capable of sensing and transmitting information concerning one or more properties of its surroundings, said properties comprising temperature, mechanical pressure, gas flow rate, gas composition and directional mechanical force, and

(b) monitoring said transmissions as an indication of the extent and movement of said flame front.

4,199,027
OIL RECOVERY PROCESS

Terence Cox, and Roger I. Hancock, both of Middlesbrough, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 14, 1978, Ser. No. 877,738

Claims priority, application United Kingdom, Feb. 28, 1977, 8270/77

Int. Cl.² E21B *43/22*

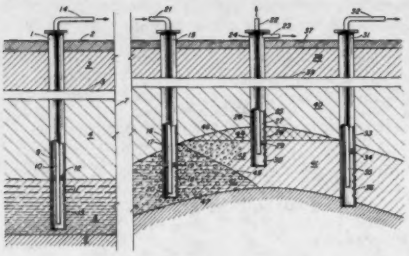
U.S. Cl. 166—274 **5 Claims**

1. A process for the recovery of oil from a subterranean formation, comprising the steps of: (1) contacting the formation with an aqueous solution or dispersion of a thickening amount of an alkali metal or an ammonium salt of a sulphated polyoxyethylene alcohol comprising an average of one to ten (CH_2CH_2O) groups per alcohol group in which at least 40% by weight of the alcohol portion of said sulphated polyoxyethylene alcohol is a C_8 to C_{20} primary alcohol having a C_1 to C_3 alkyl substituent in the 2-position of an otherwise linear chain; and (2) driving the said solution through the formation by water flooding.

4,199,028
ENHANCED RECOVERY WITH GEOPRESSURED WATER RESOURCE

Charles A. Caughey, Lafayette, La., assignor to Conoco, Inc., Ponca City, Okla.

Filed Nov. 22, 1978, Ser. No. 963,233
Int. Cl.[2] E21B 43/00, 43/24
U.S. Cl. 166—314 4 Claims



1. A process for recovery of methane from a geopressured aquifer which contains dissolved methane comprising:

(a) producing the aqueous liquid which contains dissolved methane from the aquifer into a relatively low pressure reservoir having a structural high,

(b) allowing exsolvation of the methane from the aqueous liquid which contains the dissolved methane within the reservoir and migration of the methane to the structural high, and

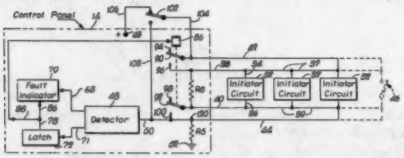
(c) producing the exsolvated methane from the structural high in the reservoir.

4,199,029
MULTIPLE, INDEPENDENTLY ACTUATABLE FIRE SUPPRESSION DEVICES EACH HAVING INDIVIDUAL ACTUATING POWER SOURCE

Karl H. Marek, Blue Springs, Mo., assignor to Fike Metal Products Corporation, Blue Springs, Mo.

Filed Apr. 10, 1978, Ser. No. 895,009
Int. Cl.[2] A62C 37/18
U.S. Cl. 169—61 19 Claims

1. In a fire protection system of the type including the combination of a plurality of fire suppressant units each having an individually associated, electrically responsive initiating device provided with an electrical path therethrough and operable for inducing activation of the corresponding suppressant unit upon delivery through said path thereof of at least a predetermined magnitude of electrical current, and a pair of electrical lines coupling the initiating devices in parallel relationship with each other, the improvement which includes:



a plurality of individual, electrical continuity monitoring means, one associated with each of said initiating devices,

each of said monitoring means being coupled with said electrical lines and with the path of the corresponding initiating device for continuously monitoring the electrical continuity of said latter mentioned path,

each of said monitoring means being operable to produce an electrical fault signal indicative of an open circuit condition in said path of the corresponding initiating device when said latter mentioned path is broken,

each of said monitoring means being operable to deliver said fault signal produced thereby through said electrical lines, whereby to allow continuous continuity monitoring of each of said paths associated with said parallel coupled initiating devices; and

detection means operably coupled with said electrical lines for sensing said electrical fault signal produced by any of said monitoring means,

said detection means including first comparing means adapted for coupling with a source of an electrical reference signal and operable for comparing the magnitude of the latter with the magnitude of said fault signal,

said first comparing means being operative to produce an output signal therefrom when the respective magnitudes of said fault signal and said reference signal are in a preselected relationship to each other.

4,199,030
METHOD AND APPARATUS FOR FARMING ROW CROPS

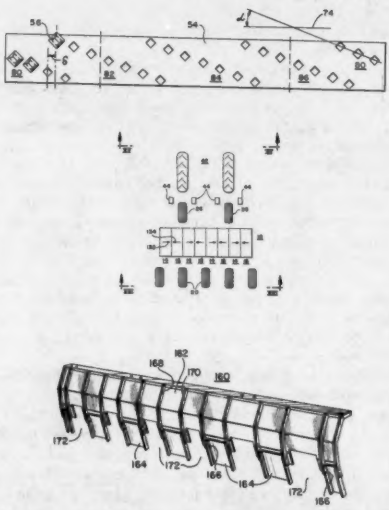
John H. Chance, Bedford, Tex., assignor to Martin Concrete Engineering Company, Fort Worth, Tex.

Filed Jul. 18, 1977, Ser. No. 816,542
Int. Cl.[2] A01B 33/02, 49/06, 33/12
U.S. Cl. 172—1 63 Claims

1. An agricultural implement for plowing soil comprising:

a carriage assembly having supporting wheels for traversing the surface of the soil to be plowed; and

a plurality of plowing tools mounted for rotation on the carriage assembly, each plowing tool having a cylindrical rim and an array of soil digging teeth secured to the rim and projecting radially with respect to the surface thereof, each tooth of the array being rigidly secured to the rim with its radial axis disposed perpendicular to the axis of



rotation of the rim and being characterized by first and second planar faces at least one of which being obliquely inclined with respect to the radial axis of the tooth and sloping away from the direction of rotation of the rim, the planar faces converging at the distal end of the tooth to define a cutting edge, each tooth of the array on each rim being oriented in such a manner that the plane containing the cutting edge and the radial axis of the tooth defines an oblique cutting angle with respect to the plane containing

the radial axis of the tooth and the line of travel of the carriage assembly.

4,199,031

SOIL CULTIVATING MACHINES

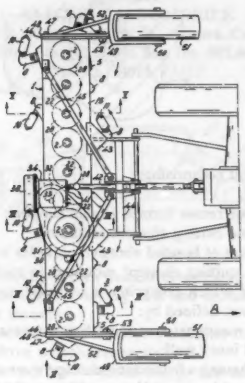
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N. V., Maasland, Netherlands

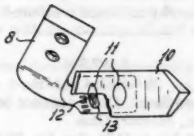
Filed Jun. 7, 1977, Ser. No. 804,389

Claims priority, application Netherlands, Jun. 10, 1976, 7606256; Mar. 17, 1977, 7702876

Int. Cl.² A01B *33/06*

U.S. Cl. 172—59 **9 Claims**





1. A soil cultivating machine comprising a frame and a plurality of soil working members positioned in a row that extends transverse to the direction of travel, said soil working members being rotatable in relative opposite directions about corresponding substantially vertical axes and each member comprising carrier means and at least one downwardly extending tool supported on said carrier means, driving means engaging said members to rotate same, said tool comprising a substantially straight, strip-like supporting portion that extends downwardly and outwardly from the carrier, the maximum width of the supporting portion being tangential to an imaginary circle centered on the axis of rotation of the corresponding soil working member, the upper end of the supporting portion being detachably fastened to said carrier means with two fastening members positioned one above the other, one of said fastening members being a shear bolt, the lower end of said supporting portion being directed forwardly with respect to the normal direction of rotation of said soil working member and a leading side of said forwardly directed lower end mounting a longitudinal blade that extends below the lower end, said blade being fastened to said end by pivot means, the longitudinal center line of said blade being substantially tangential to an imaginary circle centered on the axis of rotation of said soil working member and being pivotable about an axis that extends transverse to its longitudinal center line, whereby said blade can be orientated inwardly or outwardly with respect to the forward direction of rotation thereof.

4,199,032

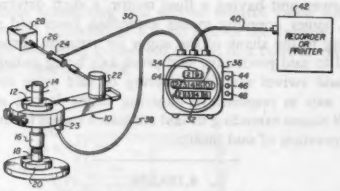
APPARATUS FOR MEASURING AND CONTROLLING A FORCE

Peter D. Weiner, Woodlands, Tex., and Charles W. Calhoun, Jackson, Wyo., assignors to Weatherford/Lamb, Inc., Houston, Tex.

Filed Feb. 17, 1978, Ser. No. 878,643

Int. Cl.² B23Q *5/027, 5/033*

U.S. Cl. 173—12 **1 Claim**



1. An apparatus for making up a threaded connection between two members having mating threads comprising,

means for rotating one member relative to the second member,

torque measuring transducer means connected to the rotating means at a distance from the first and second members and providing an output voltage signal proportional to the torque, said transducer including a Wheatstone bridge circuit,

an analog to digital converter connected to the output of the bridge circuit for converting the torque measurement signal to a digital signal,

switch means for selecting a desired torque value,

digital comparison means connected to the output of the converter and to the switch means for comparing the measured torque with the selected torque and providing a deactuating signal when the measured torque equals the selected torque,

deactuation means connected between the comparison means and the rotating means for deactuating the rotating means when a deactuating signal is received from the comparison means, and

a torque arm adjusting resistance connected to the output of the bridge circuit for compensating for the distance that the torque transducer connection to the rotating means is from the first and second members.

4,199,033

AUGERING ACCESSORY FOR BACKHOE OR THE LIKE

Joe F. Van Gundy, Jr., 710 Big Rock Ave., Plano, Ill. 60545

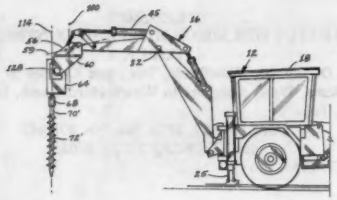
Filed May 2, 1978, Ser. No. 902,076

Int. Cl.² E21C *11/02*

U.S. Cl. 173—27 **15 Claims**

1. Augering apparatus for attachment to the boom of a machine for earth excavation, said boom extending from said

machine and having a distal end selectively positionable in azimuth, elevation and reach from said machine, said distal end having pins transverse to said boom for attachment of an earth excavating scoop or the like, said apparatus comprising a bracket for securement to said pins, a yoke carried by said bracket in swiveling relationship thereto to provide a swivel axis, said yoke having side members extending in a direction away from said bracket, a fluid power unit disposed between said side members, said power unit having pivot members, said



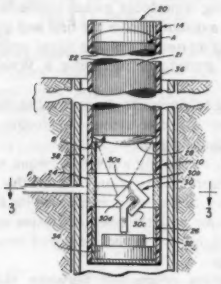
side members being secured to said pivot members in pivotal relationship to provide a pivot axis normal to said swivel axis, said power unit having a fluid motor, a shaft driven by said motor, auger coupling means extending from said shaft for coupling to the shank of the auger for rotation about an axis normal to said pivot axis, said pivot axis being radially offset from said swivel axis for castering of said yoke about said swivel axis in response to augering thrust forces, and fluid conduit means extending to said enclosure means for supplying fluid operation of said motor.

4,199,034

METHOD AND APPARATUS FOR PERFORATING OIL AND GAS WELLS

Winfield W. Salisbury, Scottsdale, and Walter J. Stiles, Phoenix, both of Ariz., assignors to Magnafrac, Ft. Worth, Tex.

Filed Apr. 10, 1978, Ser. No. 894,261
Int. Cl.[2] E21B *7/14*
U.S. Cl. 175—11 **6 Claims**



1

1. In perforating a subsurface oil or gas producing formation to increase the recovery flow therefrom by projecting a flow hole through a well casing at a selected depth and through the adjoining subsurface formation for injection of a fracing solution into the top of the casing and into the flow hole, the method comprising:

(a) generating a high-powered coherent light beam,

(b) transmitting the beam in axial path following relation within the casing from the top thereof to the selected depth therein,

(c) directing the transmitted beam laterally at the selected depth to burn through the casing and into the adjacent formation to form a flow hole directed laterally through the casing, and

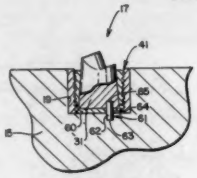
(d) successively focusing and refocusing the beam at said depth to serially concentrate the beam at each of a plurality of focal points along the deflected beam axis.

4,199,035

CUTTING AND DRILLING APPARATUS WITH THREADABLY ATTACHED COMPACTS

Donald A. Thompson, Westerville, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Apr. 24, 1978, Ser. No. 899,767
Int. Cl.[2] E21B *13/01*
U.S. Cl. 175—410 **10 Claims**



1. In a drill bit comprising:

(a) a support;

(b) at least one recess formed in said support;

(c) at least one cutting element including a stud and a mass of bonded abrasive particles bonded to said stud, a cutting element mounted in each recess; the improvement which comprises a securing means for each cutting element defined by:

(d) threaded means associated with said recess and defining a threaded inner wall;

(e) said stud having a frustoconical shape over at least part of its length and having its largest diameter toward the support; and

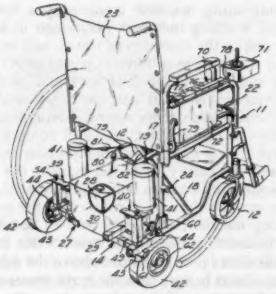
(f) a sleeve having an inner wall and a threaded outer wall; such that the outer wall of the sleeve may be threadably engaged with the inner wall of the threaded means and the inner wall of the sleeve is disposed around and engages said stud, whereby said stud is secured in said recess.

4,199,036

WHEEL CHAIR

John A. Wereb, Lyndhurst, Ohio, assignor to Instrument Components Co., Inc., Mentor, Ohio

Filed Jul. 6, 1976, Ser. No. 703,106
Int. Cl.[2] B62D *11/06*
U.S. Cl. 180—6.5 **20 Claims**



1. A collapsible portable electric wheel chair comprising a collapsible frame, a collapsible seat on said frame, at least one front wheel on said frame, and a drive unit, said drive unit

including a first drive wheel assembly, a second drive wheel assembly, means supplying electric power to each of said drive wheel assemblies for propelling and steering said wheel chair, first fastening means manually releasably securing said first and second drive wheel assemblies to said frame whereby said first and second drive wheel assemblies are manually removable from said frame when said frame is to be collapsed, each of said drive wheel assemblies including an electric motor and a ground engaging drive wheel and means drivingly connecting said electric motor and said ground engaging drive wheel, and second fastening means manually releasably securing said first and second drive wheel assemblies to one another whereby said first and second drive wheel assemblies are manually separable from one another when removed from said frame.

4,199,037

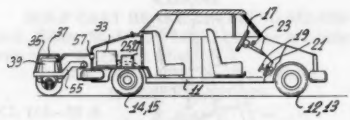
ELECTRIC AUTOMOBILE

Bruce D. White, 28615 Eagleton St., Agoura, Calif. 91301

Filed May 19, 1978, Ser. No. 907,845

Int. Cl.[2] B60L *11/12*

U.S. Cl. 180—65 C **6 Claims**



2. An electrically-driven vehicle comprising:

an automobile frame having first and second drive wheels mounted thereon;

first and second electric motors coupled to said first and second drive wheels, respectively;

a battery for storing electrical energy that can be utilized to drive said first and second electric motors; and

speed control means for controllably coupling the electrical energy stored in said battery to said first and second electric motors, said speed control means including

an accelerator pedal,

first coupling means for controllably coupling electrical energy from said battery to said first electric motor in accordance with the position of said accelerator pedal, and

second coupling means for controllably coupling electrical energy from said battery to said second electric motor in accordance with the position of said accelerator pedal,

wherein the amount of electrical energy coupled by each of said first and second coupling means is controllably adjusted to compensate for any variations in the relative efficiencies of said first and second motors, such that the respective torques produced by said first and second drive wheels are substantially equal.

4,199,038

STEERING GEAR WITH STEERING DROP ARM

Uwe Rathje, and Manfred Lappe, both of Dortmund, Fed. Rep. of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,872

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746709

Int. Cl.[2] B62D *5/08*

U.S. Cl. 180—140 **5 Claims**

1. In a steering gear with steering drop arm, steering tie rod and steering gear connecting tie rod for a vehicle which is drivable on the road and in terrain on wheels, with a steering mechanism which is actuated selectively hydraulically supported mechanically or purely hydraulically by means of hydraulic cylinders and electromagnetic valves, and a universal shaft which is connected with the steering wheel changing from the hydraulically supported system over to the purely hydraulically operating system by selectively connecting said universal shaft with one of two systems which serve the actuation of the steering mechanism, wherein in combination.

one of said systems comprises a steering transmission and the other of said systems includes a steering valve, said steering transmission and said steering valve being selectively actuated by said steering gear by selective connection with said universal shaft, respectively, said hydraulic cylinders include hydraulic cylinders of a front axle and hydraulic cylinders of a rear axle of the vehicle,

a hydraulic pump operatively connected to both of said systems,

motor means for driving said pump,

a plurality of control valves,

a flow control- and pressure limit- valve,

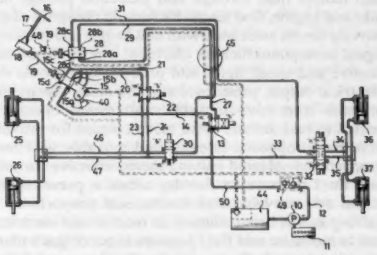
a first conduit being connected to the latter and to said pump, a second conduit connected between said flow control- and pressure limit- valve and a first of said control valves,

a first line being connected to said first control valve and to said steering transmission,

second lines are connected to said steering transmission to a second of said control valves,

third lines connecting said second control valve with said hydraulic cylinders of a front axle of the vehicle,

a fourth line being connected to said first control valve and to said steering valve,



a first selective operative pressurized oil flow path comprising in order: a fifth line being connected to said steering valve and a third of said control valves, said third control valve, and a sixth line being connected to said hydraulic cylinders of the front axle;

a second selective operative pressurized oil flow path comprising in order: a seventh line being connected to said steering valve and to a fourth of said control valves, said fourth control valve, an eighth line being connected to said third and fourth control valves, said third control valve, and a ninth line being connected to said third control valve and to said hydraulic cylinders of the front axle;

tenth lines connecting said fourth control valve with said hydraulic cylinders of the rear axle,

a third selective pressurized oil operative flow path comprising in order: said fifth line connecting to said third control valve, said sixth line connecting to said hydraulic cylinders of the front axle, said ninth line connecting to said third control valve, said third control valve, said eighth line, said fourth control valve, and one of said tenth lines connecting to said hydraulic cylinders of the rear axle;

a fourth selective operative pressurized oil flow path comprising in order: said seventh line connecting to said fourth control valve, said fourth control valve, one of said tenth lines connecting to said hydraulic cylinders of the rear axle, the other of said tenth lines connecting to said fourth control valve, said fourth control valve, said

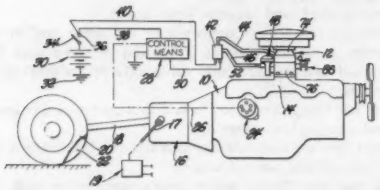
eighth line, said third control valve, and said ninth line connecting to said hydraulic cylinders of the front axle; said control valves being selectively switched such that any one of said selective operative flow paths is operative with flow of pressurized oil therethrough.

4,199,039

ELECTRONIC SPEED GOVERNOR

Michael F. Ciemochowski, Sterling Heights, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Mar. 2, 1978, Ser. No. 882,820
Int. Cl.[2] B60K *31/00*
U.S. Cl. 180—177 **1 Claim**



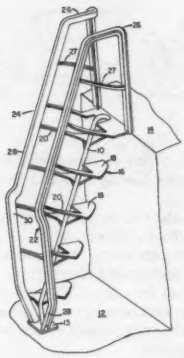
1. A governor system for a combustion engine having motive fluid induction passage means, comprising variably positionable throttle valve means for controlling the rate of flow of said motive fluid through said induction passage means and into said engine, first means for sensing the speed of monitored moving means associated with said engine and creating a speed signal in response thereto, electrical control means adapted to receive said speed signal and produce in response thereto an electrical output, pressure responsive motor means comprising pressure responsive movable wall means operatively connected to said throttle valve means, means for providing fluid pressure to opposite sides of said movable wall means, and proportional solenoid valving means effective for modulating said fluid pressure to thereby create a pressure differential across said movable wall means, said proportional solenoid valving means being adapted to receive said electrical output and to modulate said fluid pressure in accordance therewith so as to thereby vary the magnitude of said pressure differential in response thereto, said proportional solenoid valving means being effective to increase the magnitude of said pressure differential and thereby cause said wall means to move said throttle valve means toward a more nearly closed position as the speed of said monitored moving means increases and approaches a preselected governed maximum speed, said movable wall means comprising diaphragm means, said means for providing fluid pressure comprises a first source of a first fluid pressure of a generally constant first magnitude and a second source of a second fluid pressure of a second magnitude differing from said first magnitude, said first source of a first fluid pressure comprises ambient atmosphere, said first magnitude comprises generally ambient atmospheric pressure, said second source of a second fluid pressure comprises engine manifold vacuum, said second magnitude varying in response to engine speed and load, said means for providing fluid pressure further comprising first conduit means communicating between said first source and a first area adjacent a first side of said diaphragm means, continuously open second conduit means communicating between said second source and a second area adjacent a second side of said diaphragm opposite to said first side, third conduit means communicating at one end with said second conduit means at a point generally between said second source and said second area and communicating at an opposite end with said first source, said proportional solenoid valving means comprising a valve member situated in series fluid circuit in said third conduit means generally between said second conduit means and said first source, whereby during speeds of said monitored moving means less than said preselected governed maximum speed, said valve member is positioned so as to provide an unrestricted flow from said first source through said third conduit means and said second conduit means to said second source thereby preventing the communication of said second fluid pressure at said second magnitude to said second area, and as said speed of said monitored moving means approaches and equals said preselected governed maximum speed, said valve member is positioned so as to provide a restriction to the flow from said first source through said third conduit means thereby enabling the communication through said second conduit means of at least a substantial portion of said second fluid pressure at said second magnitude from said second source to said second area thereby moving said throttle valve means toward said more nearly closed position.

4,199,040

SHIP LADDER

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Jan. 22, 1979, Ser. No. 5,285
Int. Cl.[2] E06C *9/02*; B63B *29/20*
U.S. Cl. 182—93 **19 Claims**



1. A ladder comprising:

a single central tread support member adapted for mounting between an upper level and a lower level at a predetermined angle of inclination;

a plurality of tread members disposed in alternating arrangement on respective sides of said support member, each of said tread members having a foot support portion outwardly extending from said support member, and each of said tread members having rail support means outwardly extending from the foot support portion and terminating substantially in a plane forward and parallel to a plane passing through the front edges of the foot support portions; and

first and second handrails each attached to said rail support means.

4,199,041

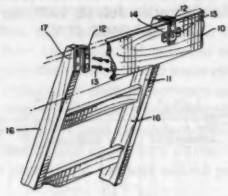
BUNK BED-LADDER ARRANGEMENT

Kenneth H. Gutner, Dato, Highland Park, Ill. 62249

Filed Dec. 7, 1978, Ser. No. 967,495
Int. Cl.[2] E06C *7/48, 1/36*
U.S. Cl. 182—206 **6 Claims**

1. In combination, a bunk bed having an upper side-defining wooden rail having a rectangular cross-section, a ladder having a C-shaped hook member secured at the upper end of each side piece adapted to straddle said rail, each member having a pair of legs depending from a connective bight portion, a pair of openings in each leg with the openings in one leg being aligned with the openings in the other leg and with the openings in said one leg being larger than the openings in said other

leg whereby a screw is insertable through an opening in said one leg to extend through the aligned opening in the other leg to secure said other leg to the ladder side piece, and a pair of relatively elongated brackets on said rail having a stepped



central portion each adapted to receive said one leg, and a detent in said central portion extending into one of said leg openings when said members are in straddle relation on said rail.

4,199,042

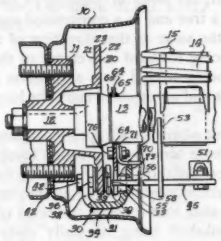
GOLF CART BRAKE LEVELING MEANS

Robert L. Kibler, St. Joseph, Mich., assignor to Lambert Brake Corporation, St. Joseph, Mich.

Filed Nov. 1, 1978, Ser. No. 956,488

Int. Cl.[2] F16D *55/224*

U.S. Cl. 188—18 A **2 Claims**



1. A brake and brake leveler suspended below a vehicle axle housing, comprising, in combination, a mounting bracket fixed to and extending downwardly from the axle housing, a bi-legged U-shaped brake housing having upwardly extending first and second opposed legs each terminating in a distal end and an intermediate bight portion therebetween, for partially surrounding a brake disc, a plurality of mounting bolts extending from the first brake housing leg and loosely through the mounting bracket to the second brake housing leg, the loose interengagement between the mounting bolts and the mounting bracket permitting the brake to move to a canted position relative to the mounting bracket, a first friction element affixed to one housing leg for engaging one side of the brake disc, a stator carried at least partially within the housing and slidably carried on the mounting bolts and mounting a second friction element for engaging an opposite side of the brake disc, actuator means connected to the housing and to the stator for drawing the housing in a given direction to urge the first friction element into disc engagement while driving the stator in an opposite direction to urge the second friction element into disc engagement, and an L-shaped leveler bracket having one leg affixed to the mounting bracket and the other leg extending parallel to said axle housing to frictionally bear downwardly against the distal end of one housing leg so as to tip the brake housing around the mounting bracket-mounting bolt engagement points from the canted position into a position in which the brake friction elements are carried substantially parallel with the brake disc, at least one of said mounting bracket and said leveler bracket defining at least one mounting aperture, the combination further including fastener means extending through the mounting aperture and engaging the other one of said mounting bracket and said leveler bracket for securing the leveler bracket to the mounting bracket at any one of a range of positions so as to adjustably locate the leveler bracket relative to the brake housing to properly tip and locate the brake housing.

4,199,043

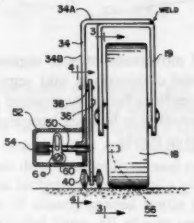
LOCK ASSEMBLY FOR SHOPPING CART TO PREVENT ITS REMOVAL FROM AN AUTHORIZED AREA

John E. Lankestor, 2708 Greenfield Ave., and Keith T. Flaherty, 2569 Patricia Ave., both of Los Angeles, Calif. 90064

Filed Oct. 5, 1978, Ser. No. 948,686

Int. Cl.[2] B60T *7/18*

U.S. Cl. 188—111 **4 Claims**



1. A lock assembly for a shopping cart, or the like, to be mounted adjacent to one of the wheels of the cart, the wheel having a slot therein, said assembly including: a bracket to be attached to the shopping cart having a section extending in spaced relationship with the wheel; a plunger mounted on the bracket for reciprocal movement in a direction parallel to the axis of rotation of the wheel between a cocked position and a second position in which the plunger is received in the slot in the wheel; spring means mounted in said bracket and engaging the plunger for biasing the plunger towards its second position; an arm pivotally mounted on the bracket and movable angularly about an axis parallel to the axis of rotation of the wheel between a first angular position in which the arm is interposed between the plunger and the wheel to hold the plunger in its cocked position, and a second angular position in which the arm is angularly displaced from the first angular position to release the plunger to its second position; and a roller mounted on the distal end of the arm to engage the surface supporting the wheel, said roller normally holding the arm in an angular position inclined to the vertical, and said roller serving to turn the arm from its first to its second angular position when a protuberance on the supporting surface is encountered thereby and when the roller rolls up the protuberance.

4,199,044

DISC ASSEMBLIES FOR VEHICLE DISC BRAKES

Cyril Ivens, Claverdon, and John C. Watson, Birmingham, both of England, assignors to Girling Limited, Birmingham, England

Filed May 2, 1978, Ser. No. 902,249

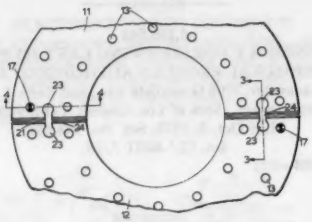
Claims priority, application United Kingdom, May 5, 1977, 18799/77

Int. Cl.[2] F16D *65/12*

U.S. Cl. 188—218 XL **10 Claims**

1. A disc assembly for a vehicle disc brake, said disc assembly comprising a rotor having opposite faces, a brake ring provided on at least one of said faces of said rotor, said brake ring being secured to said rotor by bolts, said bolts passing through clearance openings in said rotor, said bolts being stressed substantially only in tension, whereby braking torque is transmitted by frictional engagement between said ring and said rotor, said brake ring comprising at least two segments, a single pivotal connection being provided between each said

segment and said rotor to locate said segment with respect to said rotor, said pivotal connection being located at a point to one side of a radius of said disc bisecting said segment, clearances being provided between adjacent radial ends of said segments, said segments being coupled by pivotal links permit-



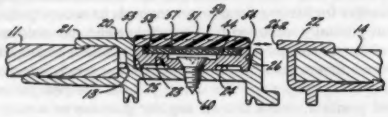
ting limited pivotal movement of said segments about their respective said pivotal connections, said segments, said links and said pivotal connections being constructed and arranged to maintain said disc assembly in balance irrespective of centrifugal, shock or expansive forces.

4,199,045

LUGGAGE IDENTIFICATION SYSTEM EMBODIED IN VALANCE

Ronald A. Machler, Germantown, Tenn., assignor to Roper Corporation, Kankakee, Ill.

Filed Mar. 2, 1979, Ser. No. 16,808
Int. Cl.[2] A45C *13/26, 13/42*; G09F *3/18*
U.S. Cl. 190—49 **9 Claims**



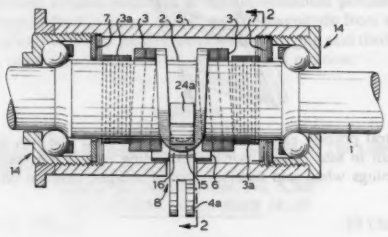
1. In a luggage construction a pair of shells having mated edges and hinge means for connecting said shells together along one side, a pair of mated valances, one of which is relatively stationary and one of which is relatively movable, extending along the respective mated edges of the shells, the valances being in mating engagement when the luggage is in closed condition, locking means coupling together the valances in the region opposite the hinge means for intentionally locking the luggage in closed condition, the stationary valance having a seating surface and an adjacent first wall and the movable valance presenting a second wall parallel to the first so that the two valances in mating engagement define an outwardly facing channel, a mounting member dimensioned to seat in the channel in the region opposite the hinge means, the mounting member having at its ends relatively thicker retaining portions and a thin central portion to form a lens receiving recess bounded by end walls, the end walls being formed with mutually opposed overhangs, a lens matching the shape of the recess and having its ends in retentively keyed engagement with the respective overhangs to permit the lens to be pressed laterally edgewise into seated position between the retaining portions when the luggage is in open condition, the adjacent and presented walls of the channel being of such height as to obstruct the respective lateral edges of the lens when the luggage is in closed condition thereby to defy removal of the lens as long as the valance locking means is in locked condition.

4,199,046

BRAKE ACTUATOR FOR BICYCLES AND THE LIKE

Winnett Boyd, 32, Restwell Crescent, Willowdale, Ontario, Canada

Continuation-in-part of Ser. No. 763,653, Jan. 28, 1977, abandoned. This application Jul. 15, 1977, Ser. No. 815,921
Int. Cl.[2] B60K *41/02*
U.S. Cl. 192—5 **10 Claims**



1. In a device for operating a brake of a pedal operated vehicle which device comprises a brake operating lever projecting through an opening in a pedal crankshaft housing of the vehicle, the lever being connected to a friction coupling which concentrically surrounds a pedal crankshaft within the housing, the coupling comprising two spring coils lightly embracing the crankshaft, the sense of winding of each spring coil, proceeding from a free end to a constrained end connected to the lever, being the same as that direction of rotation of the crankshaft producing forward movement of the vehicle, and the two springs being wound from a common length of wire which is looped at said constrained ends, the loop engaging the lever,

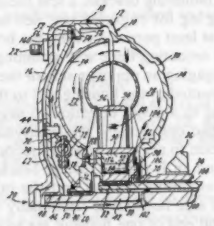
the improvement wherein each spring coil has a first portion comprising those turns nearest to the lever, and a second portion comprising those turns further from the lever, the turns in the second portion being of wire having a smaller cross-section than that forming the turns of the first portion, the crankshaft being normally embraced only by turns of said second portion.

4,199,047

HYDROKINETIC TORQUE CONVERTER WITH LOCK-UP CLUTCH

Ching-Chung Ling, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 9, 1977, Ser. No. 849,723
Int. Cl.[2] F16H *47/00*; F16D *33/00, 13/72*
U.S. Cl. 192—3.3 **6 Claims**



2. In a hydrokinetic torque transmitting unit comprising a bladed impeller and a bladed turbine situated in a torus circuit in fluid flow relationship, said impeller having an impeller housing that contains said impeller and said turbine; the im-

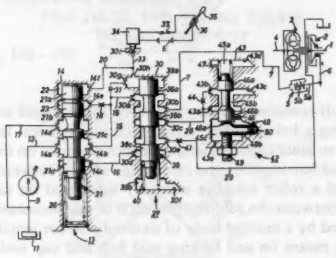
provement comprising a clutch disc in said housing adjacent said turbine and cooperating with said turbine and said housing to define two radial flow cavities, a first friction surface on the side of said clutch disc facing said turbine, a second friction surface formed on a radially outward portion of said impeller housing and adapted to register with said first friction surface on said clutch disc, first fluid passage means communicating with the radial flow cavity located between said clutch disc and said housing and the interior of said torus circuit communicating with the radial flow passage between said turbine and said clutch disc, and second fluid passage means communicating with said torus circuit, said clutch being engaged by pressure in said first mentioned radial flow cavity when said first passage means is pressurized and said second passage means is depressurized.

4,199,048

CLUTCH CONTROL SYSTEM WITH THERMOSTATIC REGULATOR VALVE

Kazuo Ishikawa, Hoi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Oct. 25, 1977, Ser. No. 845,458
Claims priority, application Japan, Oct. 26, 1976, 51-129172
Int. Cl.[2] B60K *41/02, 41/22*
U.S. Cl. 192—0.052 **5 Claims**



1. A control system of a clutch engagement mechanism drivingly connected to an output shaft of an engine and an input shaft of a transmission to be shifted by a manual lever, the system comprising:

servo means operatively connected to said clutch engagement mechanism for engaging and disengaging said clutch engagement mechanism;

shift valve means for connecting a source of oil pressure to said servo means upon shifting of said manual lever to operate said servo means and for connecting said servo means to an oil reservoir after shifting of said manual lever to release the operation of said servo means;

first and second drain passage means arranged in parallel and connecting said shift valve means to said oil reservoir;

thermostatically operated valve means, disposed within said first drain passage means for controlling the flow of oil discharged from said servo means to said oil reservoir through said first drain passage means in accordance with changes of the oil temperature, said second drain passage means constantly permitting the flow of oil, which has been bypassed around said first drain passage, to said oil reservoir; and

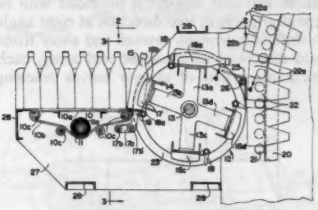
flow restriction means disposed within said second drain passage means for throttling the bypassed oil flow.

4,199,049

BOTTLE UNSCRAMBLER AND LOADER

Michael Vamvakas, Rocky River, Ohio, assignor to Niagara Bottle Washer Manufacturing Co., Cleveland, Ohio

Filed Jun. 23, 1978, Ser. No. 918,338
Int. Cl.[2] B65G *29/02*
U.S. Cl. 198—408 **5 Claims**



1. A uniform size bottle unscrambler and loader comprising a feeding table, a bottle receiving and transposing mechanism at one side of said table, means urging a collection of bottles, upended on said table, toward said mechanism, a bottle transporting mechanism downstream from said receiving and transposing mechanism including a series of a plurality of a predetermined number of closely-spaced bottle receptacles rigidly secured in two parallel rows, all of said receptacles being on parallel axes and each of a size to receive a single bottle, the receptacles of the second row being evenly offset to one side from the receptacles of the first row by half the spacing of said first row of receptacles, said receptacles all opening in a common plane toward said receiving and transposing mechanism, said receiving and transporting mechanism including a rotary transporting device having a plurality of rigidly connected transporting wheel structures equal in number to said predetermined number of bottle receptacles, each wheel structure having at least one set of two bottle carrier recesses opening radially outwardly and specifically spaced circumferentially so that the rotation of said wheel structure relative to the drive of said transporting mechanism will bring a first of said bottle carrier recesses opposite a first row receptacle on said transporting mechanism and bring the second of said bottle carrier recesses opposite a second row receptacle on said transporting mechanism, a bottle lifting arm mounted at the downstream edge of each of said bottle carrier recesses in position to pick up a bottle from said feeding table at each rotation of said wheel structure, a bottle stop positioned to hold each bottle as it reaches said pick-up position, and helicoidal rings rigid on said wheel structure, one on each side of each bottle intended for a first row receptacle and each such ring extending in a smooth curve to the opposite sides of each bottle intended for an offset second row receptacle upon rotation of said wheel structure through said specifically spaced circumference, said helicoidal rings being so constructed and arranged that, upon rotation, they present alternately a bottle to a first row receptacle and a bottle to a second row receptacle on said transportation mechanism.

4,199,050

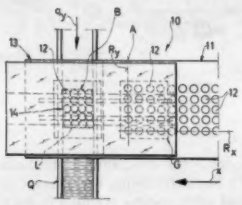
APPARATUS FOR THE PACKAGING OF COMESTIBLES AND THE LIKE, ESPECIALLY DAIRY PRODUCTS, IN CUP-SHAPED CONTAINERS

Erwin Moller, Wuppertal, Fed. Rep. of Germany, assignor to Hamba-Maschinenfabrik Hans A. Muller GmbH & Co. KG, Wuppertal-Vohwinkel, Fed. Rep. of Germany

Filed Nov. 10, 1977, Ser. No. 850,389
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 7635747[U]
Int. Cl.[2] B65G *47/32*
U.S. Cl. 198—429 **15 Claims**

1. In an apparatus for the filling of cups wherein a succession

of cups is displaced in a rectangular array on a conveyor to a cup discharge station, and respective cup lifters are provided at the discharge station to raise the cups into respective grippers adapted to remove the cups from the conveyor, the improvement wherein the grippers are provided in a rectangular array of rows extending parallel to the direction of displacement of the conveyor and rows transversely thereto on a support, each of said lifters is aligned with a respective gripper at such discharge station, and said support is provided with means for displacing said grippers in two direction at right angles to one another to shift said grippers toward and away from one another in said directions to condense said array, each of said grippers including a pair of gripper halves reaching down-



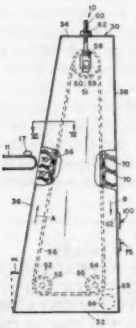
wardly toward said lifters and provided with means for displacing said gripper halves toward and away from one another in one of said directions, said support being displaceable between a position wherein said grippers are aligned with said lifters and a position in which said cups are to be released with a reduced spacing from that of the cups on said conveyor, said support being provided with a pair of main guide bars extending in the direction of displacement of said support, gripper holders slidably mounted on said main guide bars and carrying said grippers, auxiliary guide bars fixed to said support and extending inwardly from opposite edges thereof at right angles to said main guide bars, and guide blocks slidable on said auxiliary guide bars and coupled with said grippers for displacing same transversely to said main guide bars.

4,199,051

EGG TRANSPORTING SYSTEM

Walter R. Kimberley, Holland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,206
Int. Cl.[2] B65G *47/04*
U.S. Cl. 198—482 **13 Claims**



1. An egg transporting system for receiving and collecting eggs from a plurality of infeed conveyors and discharging the eggs at an output conveyor comprising:

a plurality of egg receiving cradles each of generally U-shaped construction and having a pair of asymmetric legs shaped for alternately receiving eggs from an infeed conveyor and discharging eggs to an output conveyor, said cradles each including a base, a first concavely curved leg joined to said base and cradling an egg against said base when the first leg is in a lower position, and a second leg inclined linearly downwardly and having an upwardly extending tip such that when the second leg is in a lower position an egg will move outwardly from said base and be held by said tip; and

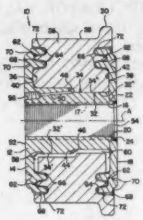
means for moving said cradles between the infeed conveyor and the output conveyor such that an egg is received by one leg of the cradle and discharged by the other leg, said moving means comprising endless loop drive means and means for supporting said endless loop drive means for movement in generally vertical directions.

4,199,052

CONVEYOR ROLLER WHEEL ASSEMBLY

James C. Morris, Twinsburg, Ohio, assignor to Mayfran, Div. of Fischer Industries, Cleveland, Ohio

Continuation-in-part of Ser. No. 823,178, Aug. 9, 1977, abandoned. This application Mar. 14, 1979, Ser. No. 20,430
Int. Cl.[2] B65G *45/02*; B61F *17/00*
U.S. Cl. 198—500 **42 Claims**



1. A self-contained unitary conveyor roller wheel assembly comprising a hub member having an outturned seal flange at one end, an inner cap seal flange member mounted on the other end of said hub member and extending radially outward therefrom, and a roller member rotatably supported on said hub member between the said flanges, each of said members being constituted by a molded body of sintered powder metal, interengaging means on and locking said hub and cap seal flange members together in predetermined fixed axial relation against both axial and rotative movement relative to one another and in fixed axial relation to said roller member as a unitary assembly therewith, said hub member having at least a portion of its axial extent of reduced outside diameter between its ends forming at least in part an annular passageway therearound, and said hub member further having a lubrication bore extending in a straight line from an end face thereof to and communicating with said passageway through a surface of said reduced diameter portion.

4,199,053

CONVEYOR AND TRAY FOR LUGGAGE

Joseph M. Casteel, 255 Lytton Rd., Coraopolis, Pa. 15108

Continuation of Ser. No. 755,358, Dec. 29, 1976, abandoned. This application Dec. 5, 1978, Ser. No. 966,662
Int. Cl.[2] B65G *47/00*
U.S. Cl. 198—523 **27 Claims**

1. A floor supported luggage transfer conveyor comprising:

an elongated frame;

a conveyor belt supported from said frame having a horizontal top surface for receiving luggage to be moved;

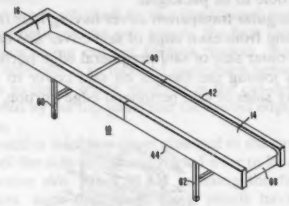
a tray disposed at one end of said conveyor belt extending at an angle relative to the horizontal top surface of said conveyor belt;

drive means supported from said frame for driving said

conveyor belt to continuously move the horizontal top surface towards said tray;

covers, slidable onto the ends of said frame and having a uniform depth, disposed along and engaging the sides of said elongated frame and said tray;

fastening means for joining said covers together;



said covers when joined together provide some structural support for said frame;

a plurality of legs which are longer than the depth of said covers supporting said conveyor belt, said drive means, said tray and said covers spaced apart from the floor; and,

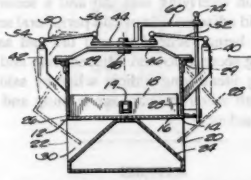
said drive means supported within the volume defined by said covers.

4,199,054

DOOR OPENING MECHANISM FOR FEED CONVEYOR

James L. Wirsbinski, Marshfield, Wis., assignor to Berg Equipment Corporation, Marshfield, Wis.

Filed Jul. 27, 1978, Ser. No. 928,478
Int. Cl.[2] B65G *19/28*
U.S. Cl. 198—735 **1 Claim**



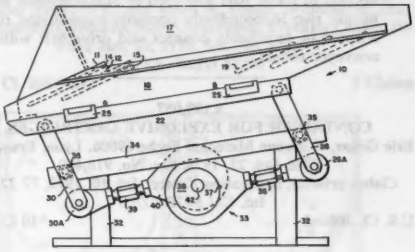
1. In a drop out device located intermediate the ends of a conveyor and including doors hinged to side walls of the conveyor for movement about horizontal axes to enable material carried by the conveyor to be discharged at a point intermediate the ends of the conveyor, the improvement comprising means to open and close said doors, said means including a crank arm, means pivotally connecting the crank arm to the conveyor top wall between the doors for pivotal movement about a vertical axis, brackets on said doors, said brackets extending outwardly and upwardly from the point of connection with the doors to a point above said conveyor side walls, and link means including couplings connecting said brackets to ends of said crank means to afford vertical movement of said link means in addition to horizontal displacement, and control means connected to said crank means to pivot said crank means and cause opening and closing of said doors, said control means comprising a control arm pivotally connected to a side wall of said conveyor at a point spaced from said doors for swinging movement about a horizontal axis, said control arm having means spaced from said control arm pivot on opposite sides of said pivot for connection to remotely operable means, and a rigid link connecting said control arm to said crank means whereby rotation of said control arm will cause pivotal movement of said crank arm.

4,199,055

SHUFFLE FEEDER INTERLOCKING FLIGHTS

Chester Green, San Jose, Calif., assignor to Genevieve I. Hanscom; Robert M. Magnuson and Lois J. Thomson, trustees of the estate of Roy M. Magnuson, all of San Jose, Calif.; a part interest to each

Filed Apr. 3, 1978, Ser. No. 893,088
Int. Cl.[2] B65G *25/04*
U.S. Cl. 198—773 **3 Claims**



1. A shuffle feed structure comprising in combination:

a set of first shuffle feed members positioned in spaced parallel relationship;

a set of second shuffle feed members positioned in parallel spaced relationship and positioned alternately between the first shuffle feed members;

drive means connecting said first sets of shuffle feed members and said second sets of shuffle feed members and operable to cause alternate back and forth movement of said feed member sets so as to effect a wave action between the adjacent shuffle members sets;

said shuffle feed members each having a front face configured to abut an article resting on the next adjacent shuffle feed member and positioned to advance the article forward as the shuffle feed member is moved by the drive means;

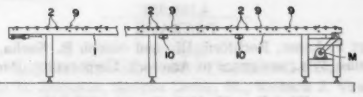
said adjacent shuffle feed members having adjacent complementary planar surfaces with offset portions such that the junction therebetween is formed in a plurality of non-coinciding planes to prevent the articles from wedging between adjacent shuffle feed members.

4,199,056

ROLLER CONVEYOR ASSEMBLY

Masahiro Matsushita, Nagoya, Japan, assignor to Line Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 30, 1978, Ser. No. 920,950
Claims priority, application Japan, Jul. 26, 1977, 52-90076
Int. Cl.[2] B65G *13/07*
U.S. Cl. 198—781 **5 Claims**



1. A roller conveyor assembly comprising:

frame means;

conveyor rollers rotatably mounted in said frame means so as to form a travelling surface for load containers;

drive means for rotating said conveyor rollers,

said drive means comprising an endless drive belt driven by a suitable power source;

container sensing means;

said travelling surface being divided into a plurality of successive, independent zones each containing one load sensing means and a group of conveyor rollers; and,

control means in each zone responsive to the presence of a container in said zone;

said control means comprising a plurality of transmission rollers adapted to detachably couple said endless drive belt and said conveyor rollers and being operative to disengage said drive means in an upstream zone of two adjacent zones when the presence of load containers is sensed in two adjacent zones,

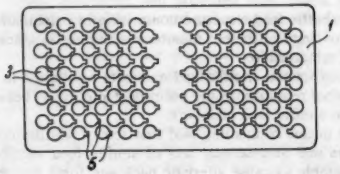
said transmission rollers being arranged in groups by connection to frame bars and each of said conveyor rollers having two independently operable transmission rollers adapted to detachably connect said drive belt with said conveyor rollers.

4,199,057

CONTAINER FOR EXPLOSIVE CARTRIDGES

Eric Gruaz, 4, avenue Marechal Foche 69006, Lyon, France

Filed Jun. 23, 1978, Ser. No. 918,400
Claims priority, application France, Jul. 18, 1977, 77 22484
Int. Cl.[2] F42B *37/00*
U.S. Cl. 206—3 **10 Claims**



1. A container for holding a plurality of explosive cartridges, said container comprising:

a base part having an upper face and formed with a plurality of blind recesses each having a shape generally complementary to that of one of said cartridges but formed along its full height with an extension and each opening upwardly only at said face, whereby a cartridge fitted in any of said recesss is aired at the respective extension;

a cover part having a lower face juxtaposable with said upper face;

a ridge formed on one of said faces and engageable with the other face to space same apart;

a skirt on one of said parts engaging past and around the other of said parts; and

a formation on said one part and on said ridge and forming an open passage extending from between said faces to an edge of said skirt, whereby the space between said faces is open to the outside through said passage.

4,199,058

PACKAGE

Robert F. Lense, Rockford, Ill., and Joseph R. Kuehn, Cross Plains, Wis., assignors to Amerock Corporation, Rockford, Ill.

Filed Dec. 18, 1978, Ser. No. 970,318
Int. Cl.[2] B65D *5/32*
U.S. Cl. 206—45.14 **2 Claims**

1. A package comprising,

(1) a molded plastic base having,

a. a rectangular member including four peripheral edges and a central portion,

b. said peripheral edges and said central portion lying in a common plane,

c. a peripheral section projecting up from said plane and extending completely around said member adjacent said edges, said section defining a well in the central portion of said base,

d. a flat tab extending from one of said edges at one side of said member and normally lying in said plane, said tab being no wider than said one side, and

e. a fold line connecting said tab and said member at said one edge to permit the tab to be folded under said member,

f. said well and said peripheral section coacting to receive an article to be packaged,

(2) a rectangular transparent cover having four flanges, one depending from each edge of said cover and each engaging the outer side of said peripheral edge portion,

(3) means joining the flanges on said cover to the corresponding sides of said peripheral edge portion,

(4) means on said tab for hanging the tab whereby each package may be hung by the tab or, alternatively, a plurality of packages may be stacked one on top of the other with the tab of each package folded under said member of the corresponding package, and

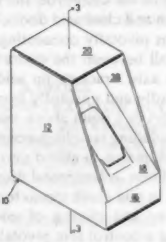
(5) a flexible sheet extending across said fold line and having a first portion overlying said tab and a second portion overlying said adjacent side of said peripheral section, said first portion being secured to said tab and said second portion being secured to said adjacent side and both portions bearing identifying indicia whereby said article is identified both when the package is hung and when the package is stacked.

4,199,059

WRISTWATCH DISPLAY CARTON

Raymond V. Maroszek, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jun. 12, 1978, Ser. No. 914,891
Int. Cl.[2] B65D *5/50*
U.S. Cl. 206—45.18 **12 Claims**



1. A wristwatch display carton comprising:

a. a pair of parallel vertical side panels each having the general shape of a rectangle having its front upper corner truncated by a canted edge, each side panel having front and back edges, top and bottom edges and the canted edge;

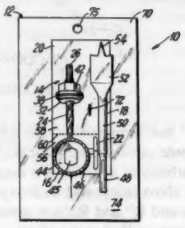
b. a bottom panel extending between the bottom edges of the two side panels;
c. a back panel extending between the back edges of the two side panels;
d. a top panel extending between the top edges of the two side panels;
e. a front panel extending between the front edges of the two side panels;
f. a face panel attached to the front panel and extending upward between the side panels, the face panel having a watch-receiving cut-out formed therein, the face panel being oriented at an inclined angle back between the side panels so that a watch received in the cut-out is partially sheltered by the top panel and the canted edges of the side panels;
g. a respective infolding panel attached to the canted edge of each of the side panels and folded over to lie adjacent the respective side panel to aid in fixing the face panel in position, each of the infolding panels having a notch formed in its upper edge; and
h. a lock flap attached to the top panel and having locking tabs thereon, the lock flap being folded inward with the locking tabs being received in the notches in the infolding panels to fix the top of the carton in place.

4,199,060

LOCK INSTALLATION KIT

Joel A. Howard, Fort Lee, N.J., assignor to Howard Hardware Products, Inc., Bloomfield, N.J.

Filed Jul. 20, 1978, Ser. No. 926,543
Int. Cl.[2] B65D *71/00*
U.S. Cl. 206—231 **8 Claims**



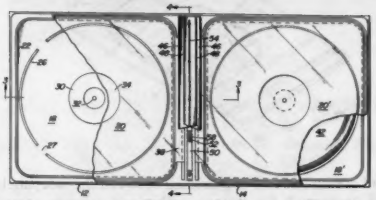
1. A lock installation kit comprising:
template means for positioning over an edge of a door for locating a center point of a door lock hole of a side face of the door at a predetermined distance from the door edge;
said template means including an elongated flat member having first and second sections foldable along a fold line therebetween to assume positions at right angles with each other thereby enabling positioning of said template over the edge of the door with said first section being disposed on the door side face and said second section being disposed on an end face of the door, said first section being longer than said second section, said first section having a single hole located at said predetermined distance when said fold line is disposed on the edge of the door;
hole cutting means for drilling the door lock hole entirely through the door side face, said door lock hole being of a size sufficient to receive therethrough a door lock;
said hole cutting means including a mandrel assembly having a shank portion capable of insertion into an electric drill, and a hole saw removably coupled to said shank portion;
said shank portion of said mandrel assembly being part of a pilot drill for inserting into said single hole in said first section of said flat member;
said mandrel assembly including a coupling arrangement secured to said shank portion of said pilot drill for supporting said hole saw and preventing rotation of said hole saw with respect to said pilot drill, and a locking member for securing said hole saw to said coupling arrangement; and
packaging means for containing together said hole cutting means and said template means to provide a unitary container.

4,199,061

RECORD ALBUM AND BOOKLET

Whitney C. Harkleroad, Lancaster, Pa.; Mark Heyderman, Miller Place, N.Y., and Louis A. Ringle, Wilmington, Del., assignors to Franklin Mint Corporation, Franklin Center, Pa.

Filed Jun. 12, 1978, Ser. No. 914,477
Int. Cl.[2] B65D *85/30*
U.S. Cl. 206—232 **5 Claims**



1. An article of manufacture comprising a record album having a stiff front cover panel and a stiff rear cover panel, hinge means pivotably connecting said panels together along a juxtaposed peripheral edge of the panels, a discrete record receptacle secured to the inner face of each cover panel, each receptacle being made from a plastic material and being comprised of a liner and a cover, the liner on each cover panel being integral in one piece with the liner on the other cover panel, each cover and the associated portion of the liner on its cover panel being approximately the same size, each cover having a flange along one side edge and pivotably connected to said liner adjacent said hinge means, each cover having a boss cooperating with a mating boss on its associated portion of the liner so that the bosses may contact a side face of a record adjacent the outer periphery of a record therebetween, each cover having a rim portion projecting outwardly beyond its associated boss, the rim portion on each cover having means for cooperating with mating structure on the associated portion of its liner for securing the cover in a closed position.

3. An article of manufacture in accordance with claim 1 including an elongated retainer attached to the inner periphery of the hinge means, an elongated retainer member overlying the retainer and releasably attached thereto, at least one sheet of material disposed between said panels with a central portion of the sheet material disposed between said retainer and retainer member.

4,199,062

LIQUID CONTAINER WITH HANG FLAP

William D. Johnston, Buffalo Grove, Ill.; Richard J. Von Drasek, Alliston, Canada, and Warren J. Bull, III, Marion, N.C., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 896,029, Apr. 13, 1978, abandoned.
This application May 4, 1979, Ser. No. 35,847
Int. Cl.[2] B65D *85/54*
U.S. Cl. 206—525 **12 Claims**

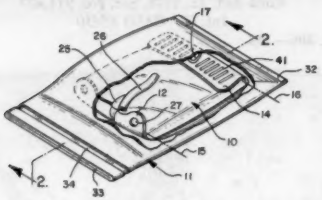
9. A liquid storage container assembly comprising, in combination:
an overpouch including a pair of generally co-extensive sidepanels joined together along their periphery to form a storage compartment therebetween;
a central container body section comprising first and second sheets of flexible non-pyrogenic plastic material sealed

along a peripheral seal line to form therebetween a liquid chamber of predetermined volume;

a port section at one end of said body section including at least one liquid port extending through said seal line for establishing liquid communication with said chamber;

a hang flap section at the other end of said body section comprising substantially co-extensive portions of said sheets extending beyond the periphery of said chamber, said portions being sealed together and including an aperture therethrough;

said hang flap section being joined to said central body section along a crease line and being folded over along



said crease line and compressed between the sidepanels of the overpouch for storage within said storage compartment of said overpouch such that the top surface of said hang flap section is brought into contact with the top surface of said body section; and

said portions of said sheets forming said hang flap section being sealed so as to form on the top surface of said hang flap section a depressed field portion and a plurality of raised spacer portions disposed within said field portion the contact area between the top surfaces, and thus the tendency for adhesion between the top surfaces during a subsequent autoclaving of the container within the overpouch.

4,199,063

RECLOSEABLE DISPENSING CARTON AND BLANK THEREFOR

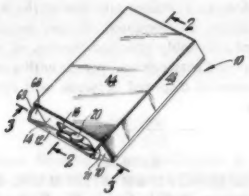
Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 19, 1978, Ser. No. 916,702

The portion of the term of this patent subsequent to Mar. 25, 1997, has been disclaimed.

Int. Cl.[2] B65D 5/72

U.S. Cl. 206—626 **10 Claims**



1. A recloseable carton for dispensing small objects comprising an elongated tubular enclosure including first and second sides, and first and second edge flaps; said enclosure being closed at one end while the other end is recloseable by, in turn, and in overlapping relationship, a lowermost elongated tab extending from said first side and including an aperture therein, said aperture disposed intermediate the length of said lowermost elongated tab and being slightly greater in size than the objects so as to allow the latter to pass therethrough, said lowermost elongated tab including opposed end flaps hingedly connected thereto and disposed wholly within said carton respectively along said first and second edge flaps; and a closure tap hingedly connected to the second side and overlapping said lowermost elongated tab, said closure tab including opposed end stop flaps which are respectively disposed between said end flaps and the first and second edge flaps, each stop flap being of greater length than the width of the contiguous edge flaps of the carton thereby limiting the extent of pivoting of the closure tab relative to the elongated tab during dispensing of objects from the recloseable carton.

4,199,064

PROCESS FOR BENEFICIATING NON-SULFIDE MINERALS

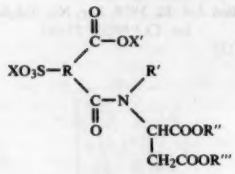
Rudolph N. Holme, Knoxville, Tenn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 21, 1977, Ser. No. 862,995

Int. Cl.[2] B03B 7/00

U.S. Cl. 209—12 **5 Claims**

1. A process for beneficiating phosphate ores which comprises classifying the mineral to provide particles of flotation size, slurrying the sized mineral in aqueous medium, conditioning the slurry with an effective amount of alkali and a collector combination and floating the desired mineral values by froth flotation, said collector combination comprising from about 1 to about 99 weight percent of a fatty acid derived from a vegetable or animal oil and, correspondingly, from about 99 to about 1 weight percent of a compound of the general formula



wherein X and X′ are members of the group consisting of hydrogen and cationic salt-forming radicals, R is the residue of an aliphatic polycarboxylic acid, R′ is a member of the group consisting of alkyl, alkoxyalkyl and hydroxyalkyl radicals of 8 to 20 carbon atoms and R″ and R‴ are members of the group consisting of hydrogen, alkyl and cationic salt-forming radicals.

4,199,065

PROCESS FOR RECOVERY OF FINE COAL

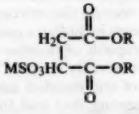
Samuel S. Wang, Cheshire; Morris E. Lewellyn, Stamford, and Eugene L. Smith, Jr., Milford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 17, 1978, Ser. No. 897,233

Int. Cl.[2] B03D 1/02

U.S. Cl. 209—166 **17 Claims**

1. A process for recovering fine coal from its associated ash which comprises conditioning an aqueous slurry of fine coal with an effective amount of a conditioning agent comprising a bis(alkyl)ester of a sulfosuccinic acid salt of the general structure

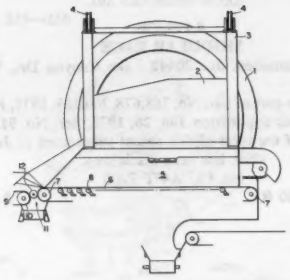


wherein R is a linear, branched or cyclic chain alkyl group of about 4 to 20 carbon atoms and M is a cation providing a water-soluble salt, and thereafter froth-floating the conditioned slurry to obtain a coal concentrate as the float.

4,199,066
EQUIPMENT FOR REMOVING THE RESIDUAL BARK IN DECORTICATING FACILITIES

Gustav Hörzer; Johann Mörth, both of Graz, Austria, and Maschinenfabrik Andritz Aktiengesellschaft, 03, Austria

Filed May 8, 1978, Ser. No. 903,924
Claims priority, application Austria, May 10, 1977, 3343/77
Int. Cl.[2] B07C 5/04
U.S. Cl. 209—626 6 Claims



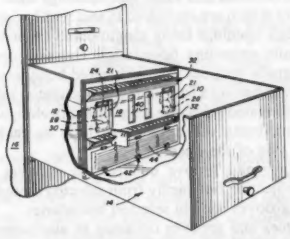
1. In equipment for separating the residual bark in decorticating facilities, for which, following decortication, the material is moved from the decorticating drum into a collecting funnel or hopper and from there moved on by conveyor system, where the conveyor system is in the form of a first conveyor belt and is mounted transversely to the lower part of the hopper extending across the end of the drum,

the improvement comprising joining one reversing location of the first conveyor belt by another reversing location of a second conveyor belt with an intermediate space between them, an additional roller corresponding in width to the width of the belts mounted between them, and one rectilinear guide means at each end of the additional roller to permit displacement thereof.

4,199,067
KEY RACK

Mitchell L. Block, Highland Park, Ill., assignor to Block and Company, Inc., Wheeling, Ill.

Filed Jul. 17, 1978, Ser. No. 925,452
Int. Cl.[2] A47F 7/00
U.S. Cl. 211—13 4 Claims



1. A key rack adapted for location in and attachment to the following block of a desk or filing cabinet drawer so as to provide accessible storage and convenient monitoring of keys, the rack comprising, in combination:

an integrally molded plastic body, the body including generally planar front and rear faces;

elongated clip means integrally formed with and projecting rearwardly of the rear face of the body for attaching the key rack to a following block;

a pair of elongated, vertically spaced, key-receiving projections integrally formed with the body and extending forwardly of the front face of the body, each projection including a plurality of slots therein for maintaining the keys in spaced, orderly arrangement, each key-receiving projection including a forwardly extending, generally horizontal uppermost surface and an inclined surface connecting the forwardmost edge of the horizontal surface to the front face of the body, and said slots being formed in the horizontal surface of the key-receiving projection;

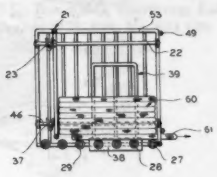
first rib means integrally formed with and extending substantially about the periphery of the rear face of the body; and

second rib means integrally formed with and extending outwardly from the rear face of the body member between the key-receiving projections, the first and second rib means and the key-receiving projections providing rigidification for the plastic body.

4,199,068
CONTAINER AND DISPENSING APPARATUS FOR DISPOSABLE DIAPERS

Adrienne S. Weitzner, 1901 Hillsdale Pl., Sarasota, Fla. 33578

Filed Oct. 5, 1977, Ser. No. 839,657
Int. Cl.[2] A47F 3/024
U.S. Cl. 211—49 D 9 Claims



1. An improved container and dispensing apparatus for effectively storing and dispensing disposable diapers of various sizes, said apparatus comprising:

container means defined by a top and bottom portion, a front and back portion and at least two sides respectively adjacent said front and back and said top and bottom portions so as to describe a cavity portion in which said disposable diapers may be stacked and constrained;

slot release means interposed between said bottom portion and one or more of said side, front and back portions to enable removal of said disposable diapers one at a time from said cavity portion;

means for adjusting the interior dimension of said cavity portion within said container means for effectively accommodating and maintaining disposable diapers of varying size in place, neatly stacked, for facilitated dispensation from within said cavity portion;

means for ascertaining the number of non-dispensed disposable diapers remaining within said cavity portion of said container means;

additional release means for facilitating the release and dispensation of said diaper from said apparatus,

said additional release means comprising a plurality of roller means proximate to said bottom portion,

said roller means arranged substantially along a single plane and assisting the conveyance of said disposable diaper atop said plane toward and through said slot release means;

one or more of said roller means having a plurality of scored indentations about its respective circumference to accommodate the adjustable attachment of said means for adjusting the interior dimension of said cavity portion within said container means,

said means for adjusting the interior dimension being operably attached to said roller means through a plurality of V-shaped adjustment clamps, each said adjustment clamp comprising a springedly formed strap having a roller aperture therethrough and a pair of free ends,

each of said V-shaped adjustment straps being capable of alternatively sliding along said roller means when said free ends of said strap are pinched inwardly towards one another, and

said adjustment strap crimping about said roller means at one of said scored indentations so as to be simultaneously restrained at a desired location along said roller means while allowing rotation of said roller means.

4,199,069

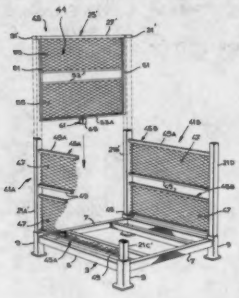
RACK

Joe Talarico, 3726 St-Ambroise, Montreal, Canada (H4C 2C5)

Filed Jan. 21, 1976, Ser. No. 651,201

Int. Cl.² A47F 5/00

U.S. Cl. 211—194 **4 Claims**



1. A carrying rack comprising:

a quadrangular support base, said base having a vertical support leg at each corner thereof, each of said support legs projecting downwardly beneath said support base and having an upwardly opening socket therein;

a one-piece vertical support post for each corner, the lower end of each support post being slidably insertable into and removable from the upwardly opening socket of its associated support leg, said lower end of said post and said upwardly opening socket being arranged so that when said lower end is inserted into said socket said one-piece support post will be supported on said base in a vertical position;

at least two cross-pieces having lengths to extend between the vertical support posts on two opposite ends of the support base, one of said cross-pieces being detachably receivable on and slidable along two of the posts on one end of said base, while the other of said cross-pieces is detachably receivable on and slidable along the two posts on the other end of said base, said cross-pieces having ring means on each end thereof adaptable to be received over the upper ends of said vertical support posts on said end of said support base and to be slidable downwardly on said support posts, said ring means each encircling their respective support posts whereby said cross-pieces are connected thereto, wherein each of said downwardly projecting support legs has a socket in the base thereof, adapted to receive the top of a support post of another rack stacked therebeneath;

side wall panel means connected to extend between the pair of support posts positioned at each side of said support base, said side wall panel means being positioned downwardly from the upper ends of their respective support posts so that said ring means of said cross-pieces can be received on and can be moved downwardly on said upper ends;

end panel means carried by each cross-piece, and depending downwardly therefrom; and

means on the lower edge of each end wall panel means engageable with said base for connecting said end wall panel means thereto as the cross-piece associated with said end wall panel means is moved downwardly on its associated support posts.

4,199,070

MODULAR RACK

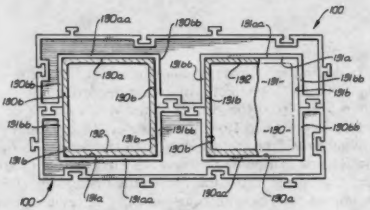
Robert O. Magnussen, Jr., 20442 Lake Canyon Dr., Walnut, Calif. 91789

Continuation-in-part of Ser. No. 768,678, Feb. 15, 1977, Pat. No. 4,099,626. This application Jun. 26, 1978, Ser. No. 919,162

The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.² A47F 7/00

U.S. Cl. 211—60 R **8 Claims**



1. A modular component of a rack for storing articles comprising

(a) a longitudinally elongated body having opposite sides, a longitudinally elongated boundary, longitudinally spaced segmented boundaries laterally spaced from said longitudinally elongated boundary, and longitudinally spaced laterally extending boundaries at longitudinally opposite ends of the body,

(b) the body having tongue and groove connections at certain of said boundaries, said connections defining guide shoulders extending widthwise between said opposite sides for guided connection with like tongue and groove connections on a like modular component,

(c) and said body defining two through openings extending widthwise between said sides, said openings sized to receive said articles which are elongated in said widthwise direction, said through openings being longitudinally spaced between said laterally extending boundaries, and said openings located generally between said segmented boundaries, each of said openings having a longitudinally elongated side and two laterally elongated sides, the longitudinally elongated side of the opening being about twice as long as each laterally elongated side of the opening,

(d) said tongue and groove connections defining T-shaped tongues projecting outwardly from selected boundaries, and T-shaped grooves sunk in selected boundaries,

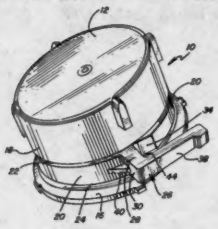
(e) said tongues and grooves occuring in alternation sequentially along and about said boundaries,

(f) four of said connections being spaced along said longitudinally elongated boundary, another four of said connections being spaced along said segmented boundaries with two of the other four connections located at the segmented boundary located between said openings, and wherein one of said connections is located at each of the boundaries at opposite ends of the body,

(g) whereby six of said bodies may be interconnected via tongues and grooves to form six rectangular through openings, four of the bodies extending longitudinally horizon-

tally, and two of the bodies extending longitudinally vertically.

4,199,071
CLOSURE WITH IMPROVED PULL TAB
Richard L. D'Amico, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed May 10, 1978, Ser. No. 904,422
Int. Cl.[2] B65D *41/32*
U.S. Cl. 215—256 **12 Claims**



1. A closure cap for a container in which the closure cap has a lower portion sealed to the container and an upper portion adapted for removal to enable access to the material within the container, a pair of peripheral grooves defining a tear strip which separates the upper portion from the lower portion, and a handle extending outwardly from the tear strip and operable when pulled to remove the tear strip, the improvement comprising, in combination:

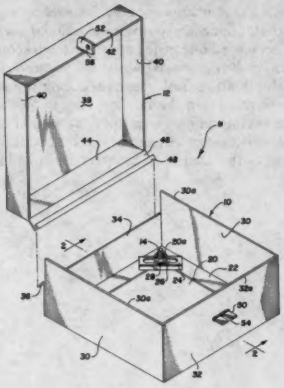
said handle having a portion contiguous with said tear strip and extending radially outwardly from said cap with one side of said handle portion facing the tear direction and being rigidly connected to said tear strip and the other side of the handle portion facing the opposite direction;

one end of the tear strip terminating adjacent said other handle side to provide a frangible start location; and

a gusset bridging said handle portion and tear strip on said one handle side to extend the fulcrum point of the handle into the tear strip tear direction thereby providing relatively greater leverage.

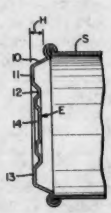
4,199,072
DETACHABLE STREET LIGHT BASE TERMINAL CABINET
Kenneth R. Jacks, 2117 Ruby, Irving, Tex. 75060
Continuation of Ser. No. 872,577, Jan. 26, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,485
Int. Cl.[2] H02G *3/08*
U.S. Cl. 220—3.4 **5 Claims**

1. A terminal cabinet for temporarily enclosing exposed electrical conductors on a street light base, the street light base having at least three upwardly extending bolts used to secure the light post thereto, the improvement comprising: a base having upwardly extending sides, each side of said base having an inwardly extending flange formed about the interior perimeter of the sides such that a central passage is formed through the bottom of the base the base further being positioned such that the electrical conductors and bolts extend upwardly through said passage; a solid cover having downwardly deflected sides extending downwardly over the upper portion of the sides of the base; means detachably securing the cover to the base; means to lock said cover to the base; clamp bars having a bolt receiving passage formed therein to be secured over the bolts on the street light base and over a portion of the flange on the inside of the base; and means secured to said bolts



for urging the clamp bars against the flange of the base to secure the base to the street light base.

4,199,073
CAN END CONFIGURATION
Laszlo A. Gombas, P.O. Box 555Q, Evergreen, Colo. 80439
Filed Aug. 4, 1978, Ser. No. 931,124
Int. Cl.[2] B65D *7/42*
U.S. Cl. 220—66 **7 Claims**



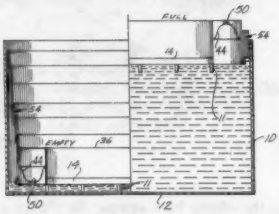
1. An end closure for a container wherein the container is characterized by having a generally cylindrical sidewall and said end closure is adapted to form a unitary extension from one end of the container sidewall, said end closure comprising:

an end panel of generally dome-shaped configuration having spaced inner and outer concentric ribs formed out of the thickness of said end panel, an outer inclined wall portion extending between the end of said sidewall and said outer concentric rib, an intermediate recessed portion extending between said inner and outer concentric ribs, and a central recessed wall portion formed within said inner concentric rib.

4,199,074
ENCLOSED SEAL FOR OPEN TOP VOLATILE LIQUID STORAGE TANKS
Donald M. Gammell, 315 N. Old Ranch Rd., Arcadia, Calif. 91006, and Homer J. Foye, Arcadia, Calif., assignors to Donald M. Gammell, Arcadia, Calif., a part interest
Filed Sep. 14, 1978, Ser. No. 942,346
Int. Cl.[2] B65D *25/00, 87/20*
U.S. Cl. 220—218 **13 Claims**

1. A tank for storing volatile liquids comprising a base, an upstanding cylindrical shell secured to the base for holding the liquid, a circular floating roof of smaller diameter than the interior of the shell positioned within the shell and adapted to

be buoyantly supported on the surface of the liquid, and movable sealing means extending between the roof and the shell for sealing the gap between the roof and the surrounding shell from the ambient atmosphere, the sealing means including a plurality of concentric cylindrical annular sections of different diameters nested one inside another in telescoping relationship, the sections being coaxial with and positioned inside said shell above the floating roof, means securing the smallest diameter section to the top of the floating roof in gas-tight relationship, limit means interconnecting the sections and the shell for limiting the vertical movement of each section, the limit means transferring the weight of any section in its lowest position to



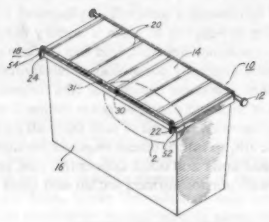
the shell, and its weight in any intermediary position to the floating roof, flexible rolling membranes secured to and extending between each pair of adjacent sections and between the outer section and the shell for providing an impervious barrier in the annular spaces between the nested sections and the shell, and variable volume gas holder means in fluid communication with the confined space above the liquid and between the inside of the shell and the outside of said sections, the gas holder receiving gas from said confined space as the space is reduced in volume by a rising liquid level in the tank, and supplying gas to said confined space as the space is increased in volume by a lowering liquid level in the tank.

4,199,075

HINGE STRUCTURE FOR REFUSE CONTAINERS

John D. Rohrer, Silver Lake, Ind., assignor to Parker Industries, Inc., Silver Lake, Ind.

Filed Aug. 8, 1978, Ser. No. 932,031
Int. Cl.[2] E05F *1/12*; B65D *43/16*
U.S. Cl. 220—334 **10 Claims**



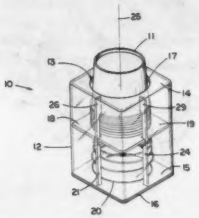
1. A hinge structure for refuse containers having a body with a top opening and a lid for the opening: said hinge structure comprising a fixture disposed at each end at the upper rear corners of the body and having a hole therethrough, a torque bar means extending along the rear side of the lid and extending through the holes in said fixtures, finger means attached to each end of the torque bar means and extending substantially at right angles thereto, spaced pivot means attached to said lid near said fixtures and being rotatable on said bar means as said lid is opened and closed, means disposed between said spaced pivot means for preventing relative rotation between the lid and said bar means in a section spaced from said pivot means, an abutment on said body at each end of said bar means forming a stop for said fingers to limit the rotation of the end sections of said bar means and thereby causing said bar means to apply a force tending to open said lid, said abutments being mounted rigidly on said body adjacent the rear edge thereof and so disposed relative to said fingers that said fingers move away from said abutments when the lid is partially opened, such that said bar means assists only the initial opening of the lid and resists only the final closing of said lid.

4,199,076

CUP DISPENSER

Jerry A. Brown, 3546 Newhouse Pl., Greenwood, Ind. 46142

Filed Jun. 26, 1978, Ser. No. 919,161
Int. Cl.[2] B65H *1/08*
U.S. Cl. 221—45 **8 Claims**



1. A dispenser of cups comprising:
a main body with a first and second end and including a cup cavity with opening at said first end for receiving a stack of cups;
a support slidably mounted withn said cavity and having a surface to receive and support said stack of cups;
first means positioned within said main nbody and operatively engaged with said support and said main body being operable to force said support and said stack of cups toward said opening but yieldable to allow insertion of a stack of cups into said cavity;
second means within said main body engaged with said support and being operable to slidably guide said support within said cavity; and
third means within said main body and projecting into said cavity at locations at said opening providing a passage smaller than said opening limiting movement through said opening; and wherein:
said main body includes an axis extending centrally and longitudinally through said cup cavity;
said second means includes a plurality of ribs on said main body which project longitudinally along the length of said cup cavity and spaced at equal angles around said axis;
said third means includes enlarged heads on said ribs adjacent said opening with said portion projecting a distance closer to said axis than said ribs;
said enlarged heads are blended into said ribs forming stop surfaces engageable with said support when said support is nearest said opening limiting movement of said support toward said opening.

4,199,077

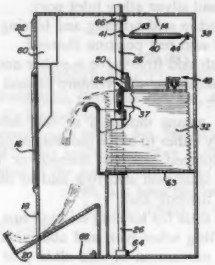
VENDING MACHINE FOR NEWSPAPERS AND MAGAZINES

Truman M. Lacewell, Rte. 1, Mt. Vernon, Ark. 72111

Filed Jul. 25, 1978, Ser. No. 927,875
Int. Cl.[2] B65H *3/22*
U.S. Cl. 221—213 **4 Claims**

1. A device for dispensing individual flat paper articles horizontally arranged to form a stack within the device, comprising, in combination, a housing having a discharge aperture therein, a longitudinally grooved vertical shaft rotatably mounted in bearing surfaces within the housing, the shaft

projecting upwardly through the housing, support means freely slidable vertically on said shaft and rotatable horizontally with rotation of said shaft, and gripping means mounted on said support means for moving the topmost of said articles from said stack for dispensing through said discharge aperture, wherein said support means comprises a horizontal push plate above said topmost of said articles, the push plate being attached to engaging means freely slidable vertically on said shaft and rotatable horizontally with said shaft, wherein said



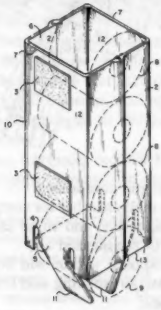
gripping means comprises a plurality of pin assemblies mounted on said horizontal plate, wherein each of said pin assemblies comprises a vertically depending gripping pin rotatably pivotable about a pivot pin held by mounting means attached to said push plate, said pivot pin being aligned in a horizontal radial direction with respect to said shaft, said mounting means having a retainer plate to limit the backward rotation of said gripping pin about said pivot pin during rotation of said shaft in dispensing the topmost of said articles.

4,199,078

TOILET TISSUE STORAGE CONTAINER

Edward Ramirez, 2604 Jupe, San Antonio, Tex. 78222

Filed Jun. 19, 1978, Ser. No. 916,905
Int. Cl.[2] A47K *10/38*
U.S. Cl. 221—309 **1 Claim**



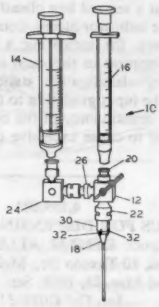
1. A wall mountable toilet tissue storage container adapted to hold a plurality of stacked toilet tissue rolls, said container comprising two identical injection molded plastic halves interlocked with each other along two longitudinal sides to form an elongated tube having an open top, said plastic halves having at their lower end a flexible tab bent inwardly between five and thirty degrees, and a longitudinal narrow groove on each side of the resilient tab, whereby the lower end of the container permits the removal of a toilet tissue roll from the plurality of stacked rolls.

4,199,079

MICROSPHERE LOADING DEVICE

Clarence M. Oloff; Willi J. Buehring, both of Dayton, and Kevin J. Greenlees, Fairborn, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 31, 1978, Ser. No. 929,469
Int. Cl.[2] G01F *11/02*
U.S. Cl. 222—1 **2 Claims**



1. An apparatus for transferring radioactive microsphere suspensions to test apparatus comprising: a first graduated syringe; a second graduated syringe; means connected to said first syringe and said second syringe for selectively transferring solutions from the first syringe and the second syringe to the test apparatus; said means for selectively transferring solutions from the first syringe and the second syringe to test apparatus including means for selectively transferring solution between the second syringe and the first syringe; said means for transferring solutions from the first and second syringes to test apparatus and for transferring solution between the second syringe and the first syringe including a three way stopcock having a hypodermic needle connected thereto for transferring solutions to test apparatus; said hypodermic needle including a plurality of air passage grooves in the outer surface thereof to permit passage of air from the test apparatus during transfer of solution to the test apparatus.

4,199,080

INPUT MONITORING SYSTEM FOR SAND CLASSIFYING TANK

Robert B. Keeney, Des Moines, Iowa, assignor to Eagle Iron Works, Des Moines, Iowa

Filed Jun. 22, 1978, Ser. No. 917,748
Int. Cl.[2] B67D *5/08*
U.S. Cl. 222—23 **10 Claims**

1. In a sand classifying tank or like apparatus for classifying granular material, of the kind including a series of classification stations at which different gradations of material accumulate at varying rates, each station having controlled product outlet means for discharging material to at least one controlled product and auxiliary outlet means for discharging to an uncontrolled residual product, the classifying tank further comprising a series of level sensors, one for each classification station, each level sensor actuating the outlet means at its classification

station to discharge material whenever material has accumulated to a given level at that station, and product control means for continuously controlling the relative amounts of material discharged through the controlled product outlet means of the classification stations to produce controlled product of predetermined constituency, within given tolerances, a monitoring system comprising:

first monitoring means for measuring the cumulative discharge at a first key classification station;

second monitoring means for measuring the cumulative discharge at a second key classification station;

and imbalance indicator means, coupled to both of the monitoring means, for indicating a substantial variation of extended duration in the ratio of cumulative discharges for the key classification stations representative of a change in the input gradation to the classifying tank likely to take the constituency of the controlled product out of tolerance or to cause excessive discharge to the residual product.

4,199,081

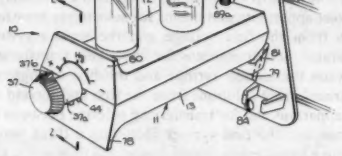
APPARATUS FOR DISPENSING MERCURY AND DENTAL ALLOY

Joseph E. Mason, 10 Tuxedo Dr., Melville, N.Y. 11746

Filed Mar. 22, 1978, Ser. No. 889,017

Int. Cl.[2] G01F *11/10*

U.S. Cl. 222—43 **17 Claims**



1. A device for dispensing a metered amount of mercury and a metered amount of silver alloy in either powder or tablet form, comprising:

a housing having upper and lower interconnected sections;

said upper housing section being provided with a mercury inlet port, a silver alloy inlet port, first mounting means associated with said mercury inlet port for supporting a mercury supply vial on said upper housing section in discharging relation to said mercury inlet port, second mounting means associated with said silver alloy inlet port for supporting on said upper housing section in discharging relation to said silver alloy inlet port a silver alloy powder supply vial, and an adapter removably securable to said second mounting means for selectively enabling the latter to support on said upper housing section in discharging relation to said silver alloy inlet port a silver alloy tablet supply vial;

said lower housing section being provided with a discharge port and with respective means defining first and second passageways for enabling gravitational flow of mercury and silver alloy to said discharge port;

means defining a guideway in said housing, a slide mounted in said guideway for reciprocal movement within said housing between a rest position and first and second displaced positions, and a knob connected with said slide and projecting exteriorly of said housing for enabling manual displacement of said slide;

said slide including first and second valve members for controlling the flow of mercury and silver alloy, respectively, between said inlet ports and said first and second passageways, said first valve member being provided with a first transverse through opening to constitute a mercury-receiving chamber, and said second valve member being provided with a second through opening to constitute a silver alloy-receiving chamber, said slide when in said rest position thereof disposing said mercury-receiving chamber in communication with said mercury inlet port and said silver alloy-receiving chamber in communication with said second passageway, and said slide when in said first displaced position thereof disposing said mercury-receiving chamber in communication with said first passageway and said silver alloy-receiving chamber in communication with said silver alloy inlet port;

spring means arranged in said housing and biasing said slide in the direction of said rest position thereof;

means connected with said first valve member and shiftable by said knob for adjusting the volume of said mercury-receiving chamber;

adjustable abutment means mounted in said housing and operable selectively either to block movement of said slide past said first displaced position thereof or to permit movement of said slide past said first and to said second displaced position thereof; and

means acting on said slide for locking said volume adjusting means against shifting whenever said abutment means is adjusted to block movement of said slide past said first displaced position thereof and for permitting shifting of said volume adjusting means whenever said abutment means is adjusted to permit movement of said slide to said second displaced position thereof.

4,199,082

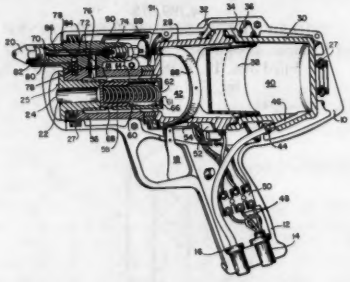
HOT MELT ADHESIVE GUN

Robert L. Ornsteen, Cape Neddick, Me., assignor to Ornsteen Chemicals, Inc., Seabrook, N.H.

Filed May 9, 1978, Ser. No. 904,438

Int. Cl.[2] B67D *5/62*

U.S. Cl. 222—146 HE **30 Claims**



1. A hot melt adhesive gun comprising:

a housing having a hot melt chamber for containing a charge of molten hot melt adhesive, and an air chamber adapted to contain a supply of pressurized air;

a moveable element disposed within said housing and providing a moveable barrier isolating said hot melt chamber from said air chamber;

means for heating said hot melt chamber to a predetermined temperature to maintain said adhesive in a molten condition;

nozzle means coupled to the forward end of said hot melt chamber and including a normally closed nozzle valve;

trigger means operative upon manual actuation to cause opening of said nozzle valve to permit the flow of adhesive from said nozzle means;

hot melt supply means including an inlet passage selectively communicating with said hot melt chamber by means of a normally closed supply valve, said inlet passage being adapted to receive a hot melt supply nozzle therein and

said supply valve being opened by said supply nozzle to introduce a charge of molten hot melt adhesive into said hot melt chamber; and

means coupling said air chamber to a supply of pressurized air.

4,199,083

TRIGGER ACTUATED PUMP

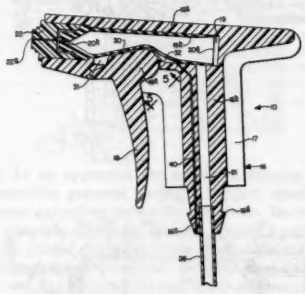
Lewis C. LoMaglio, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 747,041, Dec. 2, 1976, Pat. No. 4,101,057. This application May 1, 1978, Ser. No. 901,563

The portion of the term of this patent subsequent to Jul. 18, 1995, has been disclaimed.

Int. Cl.² B65D *37/00*

U.S. Cl. 222—207 **16 Claims**



1. A manually operable liquid dispensing pump for use and incorporation on a container for a liquid to be dispensed comprising, in combination:

a. tubular bladder means having flexible walls which expand to their natural profile when depressed and relaxed, said bladder means having an upstream end and a downstream end, said downstream end having an integrally molded one-way valve means that permits fluid to flow outwardly from said bladder means, said upstream end of said bladder means being open to permit fluid to flow into said bladder means;

b. a one-piece, integrally molded housing means having:

i. cavity means for receiving and containing said bladder means,

ii. channel means communicating with said cavity means, said channel means being located substantially adjacent to said upstream end of said bladder means and between said upstream end and said downstream end of said bladder means when said bladder means is received in said cavity means, said upstream end of said bladder means sealing one end of said channel means to prevent fluids from entering said cavity means from said channel means when said bladder means is in a depressed position or in its natural profile, and permitting fluids to enter said bladder means while said bladder means is expanding to its natural profile,

iii. vent means for conveying air from the outside of said container to the inside of said container; and,

c. trigger means connected to said housing means for depressing said bladder means to pump fluids therefrom.

4,199,084

FOUNDRY LADLE SUPPORT DEVICE HAVING GUIDES FOR LADLE PLACEMENT

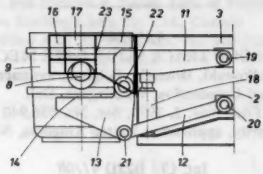
Karl H. Margraf, Langenfeld, and Herbert Hansen, Düsseldorf, both of Fed. Rep. of Germany, assignors to Sack GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 23, 1978, Ser. No. 953,599

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744670

Int. Cl.² B22D *41/00*

U.S. Cl. 222—591 **4 Claims**



1. Foundry ladle supporting apparatus comprising a vertical support member, a plurality of horizontal support members mounted for rotation on the vertical support member, a ladle carrier at the outer end of each horizontal support member, said carrier comprising spaced, parallel carrier arms and respective parallelogram linkages mounting the arms on the support member so as to project beyond the end thereof in a vertically movable manner, and lateral guide means affixed to and extending from at least one support member in flanking relationship with the carrier arms and separate from and mechanically independent of the carrier arms for guiding a foundry ladle into a position in which it is ready to be received by the carrier, whereby shocks created by introduction of the ladle into the ladle carrier bypass the ladle carrier and are borne by the guide means and horizontal support.

4,199,085

SLIDING GATE VALVE

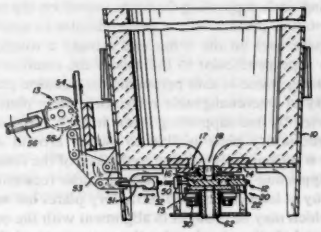
Norman H. Watts, Sheffield; Philip Weatherall, Staveley, and Robert D. Hind, Rotherham, all of England, assignors to USS Engineers & Consultants, Inc., Pittsburgh, Pa.

Filed Feb. 13, 1978, Ser. No. 876,964

Claims priority, application United Kingdom, Feb. 17, 1977, 6612/77

Int. Cl.² B22D *41/08*

U.S. Cl. 222—600 **11 Claims**



1. Slide gate valve apparatus for use with a molten metal teeming vessel comprising:

(a) a stationary refractory head plate containing an orifice defining a pour opening from said vessel;

(b) assembly means including a stationary carrier supporting an orificed refractory slide plate for sliding movement in contact with the facing surface of said head plate; and

(c) means for suspending said assembly means from said vessel including:

(i) elongated resilient support means extending transversely of the underside of, and vertically supporting said carrier; and

(ii) releasable linkage means connecting said support means with respect to said vessel and being operative, when actuated to a closed position, to impart an upward force to said support means against said carrier for resiliently biasing said slide plate into firm sliding contact with said head plate.

4,199,086

CLOSED LOOP TRACK SLIDE GATE MECHANISM

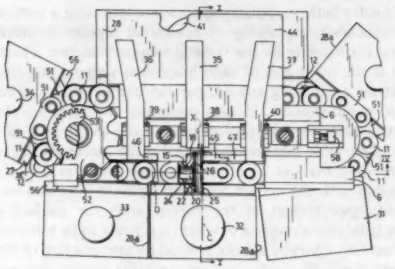
Stanislav Szadkowski, Brussels, Belgium, assignor to Vesuvius International Corporation, Wilmington, Del.

Filed Nov. 2, 1978, Ser. No. 956,940

Claims priority, application United Kingdom, Nov. 15, 1977, 47514/77

Int. Cl.[2] B22D *41/08*

U.S. Cl. 222—600 **26 Claims**



1. A slide gate mechanism for use on a pour vessel to control flow of molten metal through at least one outlet in the vessel shell, said mechanism comprising:

a guiding system comprising elongated conveyor means defining a closed loop path which runs substantially perpendicular to the axis of the outlet in the vessel shell, fixed to the vessel shell;

a plurality of movable carriages supported and guided along said closed loop path by said guiding system;

a plurality of refractory plate supporting frames, each connected to one carriage on the carriage side facing the outside of said closed loop path, by means of a connection allowing each supporting frame to swivel on the one end in a rotation plane which is perpendicular to said closed loop path, and on the other end around a rotation axis which is perpendicular to the axis of the rotation of said supporting frame in said perpendicular rotation plane;

a plurality of interchangeable refractory insert plates each supported by one supporting frame in such a manner that each refractory plate is able to swivel around an axis which is substantially parallel to the axis of the rotation of said supporting frame in said perpendicular rotation plane, whereby at least one of said refractory plates has an aperture which may be brought in alignment with the outlet in the vessel shell and whereby the movement of the carriages and the lateral edges of the refractory insert plates are so adapted that the refractory insert plates conveyed by two adjacent carriages form with respect to each other a substantially tight seal, when positioned in front of the outlet in the vessel shell;

a pushing system urging said refractory plate supporting frames, when they are in the vicinity of the outlet in the vessel shell, towards said outlet, said system comprising lever means and force supplying means, removed from the heat radiating area of said outlet, acting on said lever means;

driving means for moving said carriages along said closed loop path; whereby the refractory insert plates may be moved in very close cooperating contact with a perforated refractory plate for the outlet in the vessel shell, so as to control the flow of metal therethrough.

4,199,087

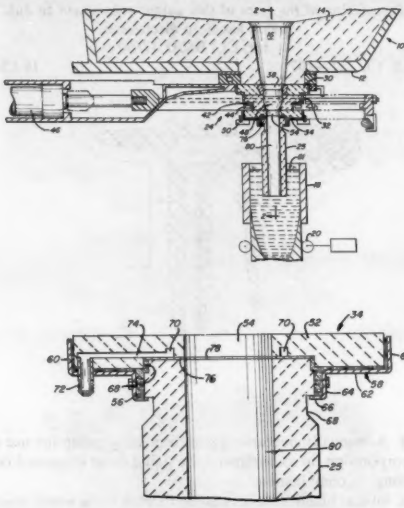
APPARATUS FOR INJECTION OF INERT GAS TO PREVENT SUPERSPEED EFFECT

Eugene A. Golas, Middletown Township, Bucks County; William A. Sech, Lower Makefield Township, Bucks County, and Shri N. Singh, Penn Township, Westmoreland County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 25, 1978, Ser. No. 872,272

Int. Cl.[2] B22D *37/00, 11/10*

U.S. Cl. 222—603 **4 Claims**



1. A pour tube assembly for subjacent attachment to a sliding gate valve organization for teeming molten metal comprising:

a refractory plate containing a through-opening and having an upper surface to accommodate relative sliding contact with a cooperating member of said sliding gate valve organization;

a lower surface on said plate spaced from, and parallel to, said plate upper surface and containing a recess having an annular wall concentrically spaced from said through-opening;

an annular groove formed in said plate lower surface concentrically disposed between said through-opening and said recess wall;

an elongated, generally cylindrical pour tube having an axial opening therethrough;

the upper end of said pour tube being received in said recess in underlying relation to said annular groove with its axial opening in registry with said plate through-opening to define a metal pour passage through said assembly;

a body of mortar sealingly disposed between the facing surfaces of said recess wall and said pour tube;

a flat shim containing an aperture registering with said metal pour passage received in said recess, said shim overlying the upper end of said pour tube and mortar body and underlying said annular groove to cooperatively define therewith an annular gas flow pass;

the facing surfaces of said shim and plate lower surface being in contact and defining an interstice extending between said annular gas flow pass and said metal pour passage; and

means in said plate for connecting said gas flow pass to a gas source.

4,199,088

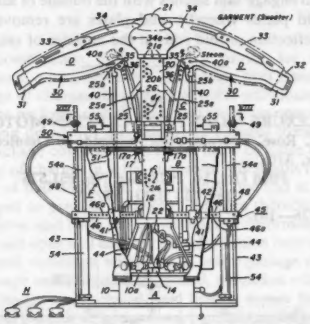
SWEATER MACHINE

John R. Sanko, Altoona, Pa., assignor to Paris Manufacturing Company, Inc., Brockway, Pa.

Filed Sep. 8, 1978, Ser. No. 940,499

Int. Cl.[2] D06F *71/18, 71/40*

U.S. Cl. 223—67 **4 Claims**



1. In an apparatus for improved shaping and finishing a sweaterlike garment having a support stand housing and a column extending upwardly therefrom, having an air-supplying chamber within the housing, having a pair of shoulder and sleeve frames extending transversely outwardly from an upper end portion of the column, and with each of the pair of shoulder and sleeve frames having upper and lower arm members in an adjustably spaced-apart inwardly open and outward swingably connected relation with respect to each other from the column, the improvement comprising, a vertically movable carriage frame operatively positioned to extend transversely outwardly with respect to the column, means for vertically adjustably positioning said carriage frame along the column, a non-permeable flexible bag extending between the housing and said carriage frame to define an enclosed lower air and steam mixing chamber therebetween, an upwardly extending heat and steam supplying tubular assembly of inner and outer tubular members positioned to extend along the column, said inner tubular members defining a heat-supplying closed steam flow system and said outer tubular members having steam-delivery openings therealong, the garment to be finished being adapted to be mounted with its shoulder and sleeve portions over the upper and lower arm members of the pair of frames to define an upper chamber and with its open end body extending downwardly therefrom in an outwardly spaced relation with respect to said tubular assembly, means carried by said carriage frame for gripping a lower open end portion of the body of the garment to define an intermediate chamber therewithin, means for supplying hot dry steam to the tubular outer members and through their delivery openings into the lower chamber defined by said bag and into the intermediate chamber defined by the body of the garment, means for supplying lower quality steam to said closed steam flow system of said inner tubular members for heating the steam being supplied to said outer tubular members, means for supplying lower quality steam to the air-supplying chamber of the housing for preliminarily heating air therewithin, means for supplying heated air from the air-supplying chamber upwardly into the lower chamber to mix with steam being supplied thereto from said outer tubular members, means for moving the mixture of steam and hot air from the lower chamber upwardly through said carriage frame and the open bottom end portion of the garment being finished into the intermediate chamber to mix with steam being directly supplied thereto by said outer tubular members, and means for simultaneously directly supplying hot dry steam into the upper chamber from inner end portions of the pairs of shoulder and sleeve frames into and along shoulder and sleeve portions of the garment being finished.

4,199,089

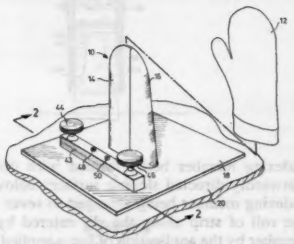
GLOVE BLOCKING APPARATUS

Colin Filkow, and Richard S. Smith, both of Winnipeg, Canada, assignors to Sterling Glove Co. Ltd., Canada

Filed Aug. 22, 1978, Ser. No. 935,753

Int. Cl.[2] A41D *19/04*

U.S. Cl. 223—79 **7 Claims**



1. A glove blocking apparatus comprising:

a first glove receiving member;

a second glove receiving member juxtaposed to said first member;

the first and second glove receiving members being movable relative to one another between a first, mutually adjacent, closed position and a second, mutually separated position;

driving means connected to at least one of the first and second glove receiving members and adapted to cause movement of said first and second glove receiving members relative to one another, between their first and second relative positions;

the first and second glove receiving members in their first, mutually adjacent closed position interfitting together to form a glove shaped mandrel which has front and rear major surfaces and opposed smooth eges, for receiving thereon a glove to be blocked, in right side out condition, with edge seams of the glove contacting said opposed edges of the mandrel;

the division between said first and second glove receiving members being located on at least one of the major surfaces of the glove shaped mandrel;

the opposed edges of said glove shaped mandrel constituting smooth surfaces provided by one of said first and second glove receiving members and being uninterrupted by the division between said first and second glove receiving members, so that relative movement of the glove receiving members to their second, mutually separated positions causes the mandrel to expand but leaves continuous smooth edge surfaces in contact with side seams of the glove being blocked thereon.

4,199,090

DISPENSER FOR ROLL OF FLEXIBLE STRIP

Steven P. Reed, Felton, Calif., assignor to Sven Tveter, Saratoga, Calif.

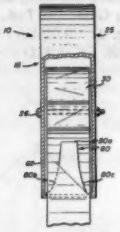
Filed Aug. 21, 1978, Ser. No. 935,561

Int. Cl.[2] B26F *3/02*

U.S. Cl. 225—13 **13 Claims**

1. A dispenser for removing successively the free end of a roll of strip, said roll of strip being formed with slits at predetermined locations therealong, said dispenser comprising:

(a) a container in which is disposed the roll of strip, said container being formed with a strip exit location;
(b) downwardly directed means projecting from said container at said strip exit location for defining a downwardly directed passage through which the free end of the roll of strip advances; and
(c) an elongated upwardly directed indexing member disposed in said passage, said indexing member being formed with a tip for entering the slit of the free end of the roll of strip advancing downwardly through said passage, said



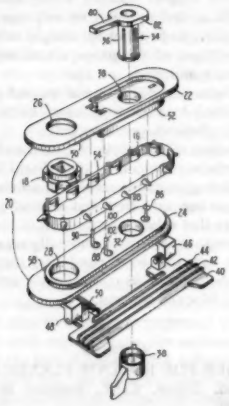
indexing member being formed with downwardly and outwardly directed sloping surfaces below said tip, said indexing member being arranged to sever the free end of the roll of strip along the slit entered by said indexing member by the application of force applied by an operator to the free end of the roll of strip, said indexing member being arranged to retard the egress of the strip trailing the free end of said roll of strip from said container during the severing of the free end of the roll of strip from the roll of strip by obstructing the path of travel of the strip trailing the slit entered by said indexing member.

4,199,091

DOCUMENT TRACTOR

Leo J. Hubbard, Somerset, Mass., assignor to Precision Handling Devices, Inc., Assonet, Mass.

Filed Jun. 27, 1979, Ser. No. 52,519
Int. Cl.[2] G03B *1/30*
U.S. Cl. 226—74 **6 Claims**



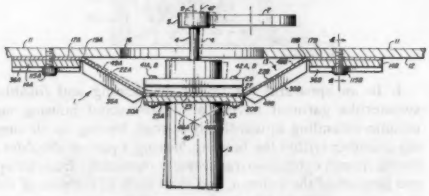
1. In a document tractor having an endless belt carrying drive elements engageable with perforations in the document, a sprocket also engageable with the belt, a frame made of molded plastic having a pair of plates disposed in side-by-side relationship and having aligned holes in which said sprocket is journaled, a first of said pair of plates having a hub extending from the side thereof facing a second of said pair of plates and adjacent to said sprocket to define a guide platform for said belt, said belt being entrained around said hub and said sprocket, a mechanism for removably fastening said plates to each other to assemble said tractor, which comprises openings through said hub extending between said plates and from the inside of said hub which abuts the inside of said second plate to the outside of said hub, flexible rods integrally molded as part of said second plate in registry with said holes at the inside of said hubs and in interfering relationship with said holes along one side thereof near the outside of said holes, latches formed on the outer ends of said rods facing the sides of said holes which are in interfering relationship with said rods when said hub is brought into abutment with said second plate to deflect said rod to engage said latches with the outside of said holes to attach said plates whereby said plates are removable upon manual deflection of said rods at the outsides of said holes.

4,199,092

FLEXURE MOUNT FOR CAPSTAN MOTOR

Stanley E. Rose, Phoenix, Ariz., assignor to Omnicomp, Inc., Phoenix, Ariz.

Filed Oct. 16, 1978, Ser. No. 951,575
Int. Cl.[2] B65H *17/22*
U.S. Cl. 226—181 **10 Claims**



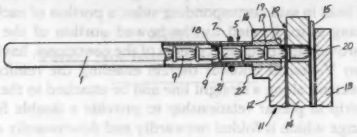
1. In an apparatus including a rigid support and a motor having a rotatable shaft, a first roller connected to said shaft, and a second roller controllably movable to frictionally engage said first roller to cause said second roller to be rotated, said shaft having a first axis, a motor mounting system comprising in combination:
a. support means for supporting said motor, said support means having first and second opposed ends thereof;
b. a first connecting member for supporting said first end of said support means, said first connecting member having a first end hingeably connected to said first end of said support means and a second end hingeably connected to said rigid support;
c. first end means for hingeably connecting the first and second ends of said first connecting member to said rigid support and said support means, respectively;
d. a second connecting member for supporting said second end of said support means, said second connecting member having a first end hingeably connected to said second end of said support means and a second end hingeably connected to said rigid support;
e. second end means for hingeably connecting the first and second ends of said second connecting member to said rigid support and said support means, respectively; and
f. attaching means for attaching said motor to said support apparatus, a first plane passing through said hingeably connected ends of said first connecting member intersecting a second plane passing through said hingeably connected ends of said second connecting member in a line passing through a point located approximately at the composite center of gravity of said motor mounting system and said motor.

4,199,093

SELF-CLOSING PROPELLANT CHARGE PACKAGE

Marc Combette, and Jean Ollivier, both of Valence, France, assignors to Societe de Prospection et d'Inventions Techniques S.P.I.T, Bourg-les-Valence, France

Continuation of Ser. No. 841,783, Oct. 13, 1977, abandoned.
This application Sep. 11, 1978, Ser. No. 940,938
Int. Cl.[2] B25C *1/00, 1/10;* F41C *25/00*
U.S. Cl. 227—9 10 Claims



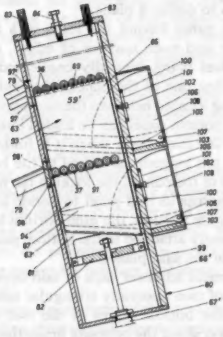
1. In combination with a loading device for a power-actuated tool, a projecting tubular loading port insert adapted for passage of charges therethrough and a self-closing propellant charge package; said loading port insert co-operating with said loading device for the passage of charges thereinto, said charge package comprising a tubular body of a size to receive a plurality of charges in serial alignment and means for biasing a portion of said body, said body having one end at least partially closed to prevent passage of charges therethrough and one end open, said body further including a deformable portion adjacent said open end adapted for reformation between a first, undeformed, condition admitting of ready passage of charges therethrough and a second, deformed, condition wherein passage of charges is prevented, said biasing means biasing said deformable portion to said second condition, said body being adapted for telescoping emplacement on said loading port insert whereby said biasing means is overcome and said deformable portion is returned to a substantially undeformed condition, allowing charges in said body to pass freely through said loading port insert into said loading device.

4,199,094

MACHINE FOR THE ATTACHMENT OF RIVETS, BUTTONS, OR THE LIKE

Herbert Birkhofer, Brunswick, and Metin Ersoy, Wuppertal, both of Fed. Rep. of Germany, assignors to Schaeffer-Homberg GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jul. 21, 1978, Ser. No. 926,883
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732900; Jun. 3, 1978, 2824439
Int. Cl.[2] B21J *15/10*
U.S. Cl. 227—37 10 Claims



1. A machine for the attachment of rivets, buttons, or the like, particularly to clothing pieces, with an upper tool and a lower tool and with magazine chambers for upper parts and lower parts, from which chambers the upper and lower parts, respectively, are brought via feed rails into the region of the working position, comprising

a magazine having side walls, a rear wall and a front wall, defining at least two magazine chambers arranged in levels one above the other, at least one of said walls being formed with discharge openings communicating with said magazine chambers, respectively,

a single slide being coordinated to both of said chambers, said slide being mounted in said magazine moveably up and down in front of said rear wall, said slide having a front side defining a wide surface,

stroke and sorting ledges on said wide surface of said slide, said ledges being inclined downwardly in a direction of said one side wall,

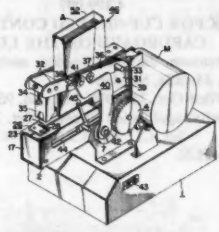
said ledges being disposed in an upper position of said slide flush in alignment with said discharge openings of said one side wall.

4,199,095

STAPLING MEANS

Noboru Yamanoi, Narashino, Japan, assignor to Maruzen Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1978, Ser. No. 969,016
Claims priority, application Japan, Dec. 15, 1977, 52/151068; Dec. 15, 1977, 52/151069; Jun. 30, 1978, 53/90556[U]
Int. Cl.[2] B25C *5/02*
U.S. Cl. 227—125 3 Claims



1. A stapler comprising:

a staple bending table having inclined guide surfaces for guiding and bending both legs of a staple;

a main arm having a staple push-out blade at the forward edge thereof and pivotably supported at a support point at the rear edge thereof;

said staple push-out blade being movable in an approaching direction toward and in departing direction away from said staple bending table;

means for supporting said main arm relative to said table;

a sub-arm pivotably supported by said main arm at a position other than the said support point of said main arm;

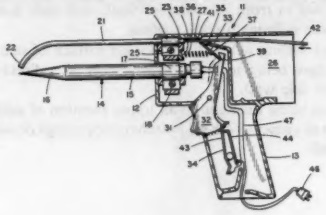
a drive mechanism rotatably connected to said sub-arm at a position more forward with respect to said support point of said sub-arm and adapted to impart a rotary force in one direction to said sub-arm; and

a spring secured to said sub-arm at a position more rearward with respect to said support point of said sub-arm and adapted to impart a rotary force to said sub-arm in a direction opposite to said one direction.

4,199,096
SOLDER DEVICE HAVING CARTRIDGE FEED OF SOLDER

Richard A. Keefe, Wilmette, Ill.; David B. Schurman, Jr., Carver, and Jon W. Leask, Squantum, both of Mass., assignors to Home Solder Corporation, Wilmette, Ill.

Filed Feb. 1, 1977, Ser. No. 764,606
Int. Cl.[2] B23K 3/06
U.S. Cl. 228—52 **16 Claims**



1. An improved solder device, comprising: a body portion; a soldering member and guiding conduit projecting from said body portion;

a control member pivotally mounted within said body portion;

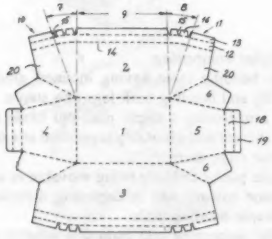
an electrical switch means for actuating said soldering member, said switch means being located for communication with said pivotally mounted control member;

and a pawl means for advancing a supply of solder through said guiding conduit, said pawl means being located for communication with said control member, said control member including a recess near its upper end facing the general direction of the solder supply advance and said pawling means being mounted to seat within the recess when in pawling engagement with the solder.

4,199,097
BLANK FOR CUP-SHAPED CONTAINER OF CARDBOARD OR THE LIKE

Od W. Christensson, Järfälla, Sweden, assignor to Esseltepac Aktiebolag, Järfälla, Sweden

Filed Oct. 24, 1978, Ser. No. 954,075
Claims priority, application Sweden, Oct. 25, 1977, 7711983
Int. Cl.[2] B65D 5/24, 5/40
U.S. Cl. 229—31 R **4 Claims**

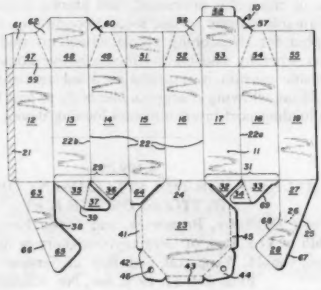


1. A blank for a cup-shaped container fabricated of cardboard or the like and comprising a bottom of substantially rectangular shape, a plurality of sides projecting upwardly from side edges of the bottom and having rounded corners at the upper edge thereof and an edge flange projecting obliquely downwardly at an angle along said sides from the upper edge and extending continuously around the entire upper edge, said blank being formed as an integral unit comprising a bottom portion and sides which are integral with said bottom portion, each of two opposite sides of said blank being longer than the lateral edge of the bottom portion with which said two sides are integral, said two sides including a portion which is partially bowed when the blank is formed into the container so as to provide the rounded corners of the container and which is an integral part of the edge flange of the formed container, the total length of the edge flange corresponding to the periphery of the container at the upper edge thereof, said edge flange of said blank comprising a combination of an edge flange strip and reinforcing strip which extend parallel to each other and are defined relative to the corresponding sides of the blank by parallel lines in said corresponding sides, a portion of each said reinforcing strip, formed by the bowed portion of the sides which provide the rounded corners of the containers, having at least two V-shaped notches therein enabling the reinforcing strip to extend along a straight line and be attached to the edge flange strip in planar relationship to provide a double folded edge flange which is folded outwardly and downwardly at the same time as the associated sides of the blank are similarly bowed to provide the rounded shaped at the upper edge of the container when the container is formed.

4,199,098
CONTAINER POLYGONAL IN CROSS-SECTION COLLAPSIBLE TO FLAT CONDITION

Louis R. Lopez, Leominster, Mass., assignor to Corrugated Paper Corporation, Westboro, Mass.

Filed Dec. 8, 1978, Ser. No. 967,836
Int. Cl.[2] B65D 5/36
U.S. Cl. 229—41 C **10 Claims**



1. Container, comprising:

(a) a main body consisting of an even number of rectangular panels hingedly connected along hinge lines seriatim to form a tube, the body being foldable flat along opposite hinge lines to define a plane,

(b) a bottom panel having the form of a regular polygon having the said even number of edges, one edge of the bottom panel being hingedly connected to the bottom edge of a first one of the panels, the said first one of the panels being located between the said opposite hinge lines, so that the bottom panel can be folded into the plane in the interior of the main body when it is folded,

(c) a locking tab hingedly attached to the bottom edge of a second one of the panels, the locking tab having a fold line extending across its mid-point to divide it into a free portion and a glue portion, the glue portion being adapted to be permanently attached to the bottom panel with the fold line lying in the said plane,

(d) a web element adjacent each of said opposite hinge lines consisting of two generally triangular tabs hingedly connected to the bottom edges of the two adjacent panels which extend along the opposite hinge line, one of the tabs having a glue extension for permanent attachment to the other tab, and

(e) said locking tab being formed with a concave curved edge facing each of the said web elements and each of said

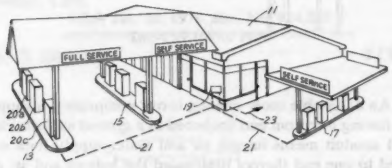
web elements being provided with a convex curved edge that conforms to the adjacent concave edge of the locking tab, so that the locking tab and the web elements lie substantially in the same plane under the bottom panel and provide a substantially continuous support for the bottom panel.

4,199,099
Patent Not Issued For This Number

4,199,100
CREDIT CARD AUTOMATED SYSTEM FOR VEHICLE SERVICE STATIONS

Wolfgang J. Wostl, South Holland; Jack S. Segal, Park Forest, both of Ill.; Thomas L. Roach, Dyer, Ind., and Robert A. Moore, Park Forest, Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jun. 8, 1978, Ser. No. 913,917
Int. Cl.[2] G07F 7/08; H04Q 1/30
U.S. Cl. 235—381 **20 Claims**



1. An attendant-controlled system for automatic enablement and monitoring of fuel dispensers and transacting sales comprising:

at least one manually operable fuel dispensing means for dispersement of fuel, each said fuel dispensing means including means for generating first coded data signals representative of the value of fuel dispensed;

credit card reader means operable for identifying indicia carried by a credit card and for generating second coded data signals indicative of said indicia;

attendant-operable keyboard means including:

(i) sale input means for generating third coded data signals representative of the value of at least one non-fuel sale keyed-in by the attendant;

(ii) print key means manually actuable for generating a print signal for commanding a receipt print-out of said value of fuel dispensed and/or said non-fuel sale; and

(iii) cash key means manually actuable for generating a cash signal for permitting a non-credit card sale;

receipt printer means for printing alphabetic and/or numeric information;

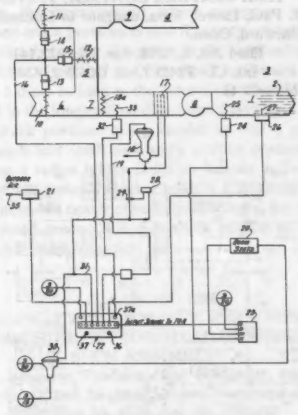
data transmission means connectable to a data bank capable of transmitting data signals thereto and capable of receiving fourth coded data signals from the data bank representative of credit authorization, said fourth coded data signals having a valid credit state or a non-valid credit state; and

processor control means interconnected to said fuel dispensing means, said credit reader means, said keyboard means, said receipt printer means and said data transmission means, said processor control means responsive to said second coded data signals for instructing said transmission means to transmit said second coded data signals to said data bank, and responsive to said print signal and a valid credit state of said fourth data signals for transmitting said first coded data signals and/or said third coded data signals to said printer means for instructing said printer means to print a receipt indicative of said value of dispensed fuel and/or said non-fuel sale, said processor control means responsive to a non-valid credit state of said fourth coded data signals for inhibiting said printing of said receipt responsive to said print signal, and said processor control means responsive to said cash signal despite a non-valid credit state of said fourth coded data signals for processing said first and said third coded data signals.

4,199,101
MULTIPLE LOAD INTEGRATED FLUID CONTROL UNITS

Scott B. Bramow, Oak Creek; Richard N. Laakaniemi, Hales Corners, and Paul E. Wichman, Brookfield, all of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.

Filed Jan. 26, 1979, Ser. No. 6,865
Int. Cl.[2] G05D 23/13
U.S. Cl. 236—13 **19 Claims**



12. A mixed air conditioning pneumatic control unit having a housing with a plurality pneumatic signal connector means for input/output connectors in an interrelated control system of a mechanical air conditioning means and an outside air supply and exhaust damper means for controlling of the mixed air supplied to an enclosure, comprising a conditioning means control channel having a fluid repeater with a signal pressure input connector means adapted to receive a temperature-related fluid signal, an outside air supply and exhaust control channel having a fluid repeater with a signal pressure input connector means adapted to receive a temperature related fluid signal demand signal means connected to each of said first and second input means, said repeater of said conditioning means control channel including a fluid signal output connector means adapted to be connected to said conditioning means and

developing an output signal directly related to said demand signal for controlling said conditioning means, said outside air supply and exhaust control channel including a second fluid repeater connected to a first output of the first fluid repeater of the same channel and to a damper output connector means adapted to be connected to damper means and developing an output signal directly related to said demand signal for controlling said damper means, said exhaust control channel including an outdoor air interlock means and a minimum outdoor air setpoint means, said outdoor interlock means including a pneumatic pressure selector having an outdoor air temperature sensor input connector means and an adjustable setpoint leak-port valve connected to supply a regulated pressure to said selector for generating a fluid switchover signal at a selected temperature and an outdoor interlock fluid switch connected to said pressure selector and to the output of the first fluid repeater of said air supply and exhaust control channel to selectively hold said channel in the standby position, said minimum outdoor air supply means including an adjustable pneumatic leak-port valve connected to said second fluid repeater of said air supply and exhaust control channel to maintain a minimum level signal from said second fluid repeater independent of the level of said demand signal, and a bypass switch having an input coupled to said outdoor interlock fluid switch and an output means connected to said second fluid repeater and to said adjustable pneumatic leak-port valve for selectively by-passing and operatively removing the adjustable pneumatic leak-port valve.

4,199,102

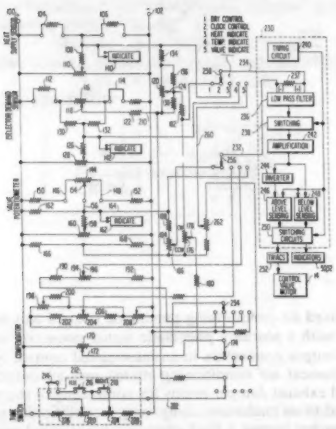
TEMPERATURE CONTROL SYSTEM

Steven W. Paul, Laurel, Iowa, assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Jul. 5, 1978, Ser. No. 922,141

Int. Cl.[2] F24D *1/00*; G05D *23/24*

U.S. Cl. 236—91 G **13 Claims**



1. In a balanced bridge control system for controlling the temperature in a space, said system having a source of heat and means to vary the rate at which heat is supplied, sensor means on a first bridge leg to determine the supply of heat to the space, sensor means on a second bridge leg to determine the demand for heat and a control circuit to alter the rate at which heat is supplied in response to the demand and supply sensor means, the improvement comprising high impedance coupling means for connecting said first bridge leg and said second bridge leg to said control circuit.

4,199,103

ADJUSTABLE SNOW MAKING TOWER

Herman K. Dupre, Seven Springs, Champion, Pa. 15622

Filed Jan. 15, 1979, Ser. No. 3,627

Int. Cl.[2] A01G *15/00*

U.S. Cl. 239—14 **4 Claims**

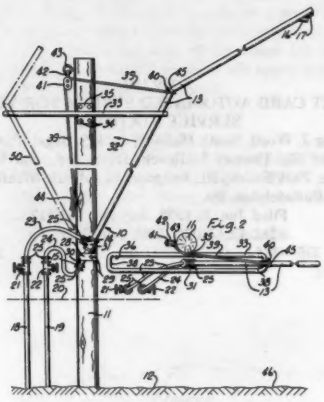


Fig. 2

1. An adjustable snow making tower comprising, a support pole having a bottom end anchored in a ground surface, elongated conduit means having air and water supply lines connected to one end thereof designated the bottom and air and water discharge nozzle means adjacent the top thereof for making snow in freezing ambient temperatures, the bottom end of said conduit means pivotally connected to said support pole adjacent the anchored bottom end thereof for pivoting of said conduit means thereabout in a vertical plane for adjustment of snow placement on the ground surface, and slide guide means secured to said support pole adjacent the top end thereof and slidably engageable with said conduit means to guide the pivoting of and limit the extent of pivot of said conduit means about said pivot.

4,199,104

PLASMA SPRAYING APPARATUS

Johan M. Houben, Lieshout, Netherlands, assignor to Plasmainvent AG, Switzerland

Filed Jan. 21, 1977, Ser. No. 760,942

Claims priority, application Netherlands, Jan. 23, 1976, 7600738

Int. Cl.[2] B05B *17/04*

U.S. Cl. 239—81 **1 Claim**

1. A plasma spraying apparatus comprising a casing having an inlet and an outlet orifice;

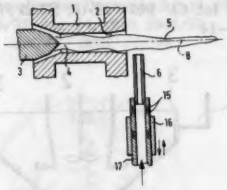
means for supplying a gas through said inlet to the interior of said casing;

means for producing an electric arc within said casing interior to produce a plasma stream emerging through said outlet orifice;

supply means for a coating powder in a carrier gas having an

outlet for introducing said powder into said plasma stream; and

release means for selectively and readily adjustably releasing carrier gas from said supply means upstream of said outlet,



said release means comprising a chamber in said supply means, an adjustable gas outlet from said chamber, and an inlet tube for delivering powder to said chamber, said inlet tube being slidable lengthwise relatively to the interior of said chamber.

4,199,105

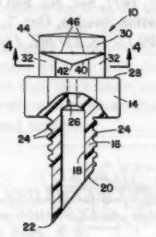
LOW VOLUME SPRAY DEVICE FOR SURFACE IRRIGATION SYSTEM

Donald Olson, Chula Vista, Calif., and Richard P. Georges, Winter Haven, Fla., assignors to Olson Irrigation Systems, Santee, Calif.

Filed Jul. 13, 1978, Ser. No. 924,289

Int. Cl.² B05B *1/26*

U.S. Cl. 239—498 **2 Claims**



1. An integral, one-piece spray device for use in a surface irrigation system and adapted to be connected to a conduit supplying liquid under pressure, said device comprising:

a head portion having an irregular exterior surface means so that it can be readily gripped for turning when inserted into said conduit;

a lower tubular portion extending downwardly from said head portion, having an axial bore and a beveled lower end;

a deflector means integrally attached to and spaced above said head portion and having a cylindrical outer surface and a smooth conical bottom surface that slopes upwardly and outwardly from a central apex to an outer edge that intersects said outer cylindrical surface;

an orifice in said head portion having a smaller diameter than and being aligned with said bore and also aligned with and spaced from said central apex of said deflector surface; and

a series of small indentations spaced apart along the periphery of said deflector outer edge for decreasing the droplet size of water as it leaves said deflector means.

4,199,106

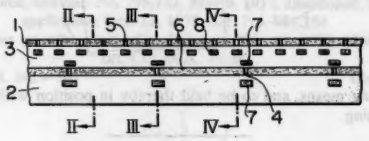
IRRIGATION HOSE

Susumu Kojimoto, Takatsuki; Takami Sato, Toyonaka; Junji Ono, Takatsuki; Toshio Mori, Toyonaka, and Shigeharu Suzuki, Settsu, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 31, 1978, Ser. No. 929,414

Claims priority, application Japan, Aug. 12, 1977, 52-97228; Mar. 6, 1978, 53-25878; Mar. 10, 1978, 53-31009[U]

Int. Cl.² B05B *15/00*

U.S. Cl. 239—542 **8 Claims**

1. In an irrigation hose which is produced by melt-sticking a double layer thermoplastic resin film in a plane along longitudinal parallel lines so as to form at least two passages, one of said passages being a constant pressure passage and the other being a supply passage, said supply passage and constant pressure passage being connected by first communicating holes which are formed by first non-melt-stuck portions of said film spaced in a melt-stuck line provided between the supply passage and the constant pressure passage, said constant pressure passage having water-irrigating holes which are formed by second non-melt-stuck portions of said film spaced in an outside melt-stuck line defining a boundary of said constant pressure passage, the improvement which comprises providing first small melt-stuck portions in said film in the vicinity of said water-irrigating holes, the dimension in the longitudinal direction of the hose of each of said first small melt-stuck portions being 0.5 to 3 times as long as the dimension of said water-irrigating holes in the longitudinal direction of said hose, said first small melt-stuck portions being located so that a peripheral portion of each first small melt-stuck portion contacts with a circle having a radius which is 0.5 to 2 times as long as the dimension of said water-irrigating holes in a longitudinal direction of said hose, the center of said circle being at the inside end of an associated second non-melt-stuck portion of said film forming a said water-irrigation hole.

4,199,107

LIQUID SPRAY JET ASSEMBLY AND A MINERAL MINING MACHINE CUTTING HEAD INCORPORATING SUCH ASSEMBLY

Garrick R. Bingham, Fishlake, Near Doncaster, England, assignor to Green and Bingham Limited, Doncaster, England

Filed May 30, 1978, Ser. No. 910,672

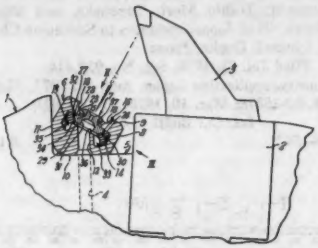
Claims priority, application United Kingdom, Jun. 9, 1977, 24089/77

Int. Cl.² B05B *1/00*

U.S. Cl. 239—600 **10 Claims**

1. A liquid spray jet assembly comprising a rigid housing designed to be secured to a piece of apparatus, a jet fitted within the housing, retaining means for releasably retaining the jet within the housing, and communicating passages through the housing and the jet for the passage of liquid therethrough, in which the housing and jet are so shaped that the jet is a push fit into the housing through an opening therein and is removable from the housing through said opening, and a resilient seating is provided between the jet and a part of the housing, the seating being made from a compressible material that deforms to allow fitting and removal of the jet and that is so compressed by the jet when positioned in the housing that the restoring force due to such compression causes part of the jet

to be forced towards a surface of the housing facing towards the seating, said surface at least partially constituting the re-



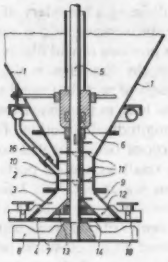
taining means, and to be held thereby in position within the housing.

4,199,108

APPARATUS FOR BUILDING UP AND REPAIRING A REFRACTORY LINING

Friedrich Baumgartner; Karl H. Fernow, both of Veitsch; Franz Waisnix; Franz Weiss, both of Vienna, and Werner Zach, Veitsch, all of Austria, assignors to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

Filed Jul. 5, 1978, Ser. No. 921,901
Claims priority, application Austria, Jul. 6, 1977, 4850/77
Int. Cl.[2] B05B *3/08, 3/10*
U.S. Cl. 239—662 **5 Claims**



1. For use in an industrial oven or like hot-running vessel having a vertically extending refractory lining, an apparatus capable of being lowered thereinto and comprising

(a) a disc extending in a horizontal plane and rotatable about an axis in either one of a selected direction of rotation for centrifugally depositing a granular refractory material on a portion of the lining to be built up or repaired,

(b) a conduit for feeding the granular material to the disc,

(1) the conduit having an outlet opening above the disc,

(c) a mixing and conveying means for the granular material in the conduit, and

(d) a drive shaft for the disc and for the mixing and conveying means,

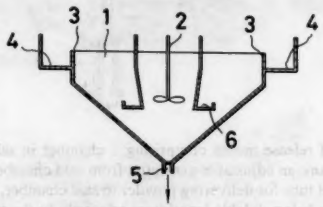
(1) the mixing the conveying means being arranged for conveying the granular material to the rotatable disc in either one of the selected direction of rotation of the disc, the mixing and conveying means comprising segmental plates arranged in a plurality of parallel planes spaced from each other and extending transversely to the drive shaft, the segmental plates being affixed to the drive shaft and including entrainment elements projecting from the underside of the plates, the entrainment elements having two entrainment faces converging towards each other in the direction of conveyance of the granular material.

4,199,109

METHOD FOR RECOVERING DIFFERENT PLASTIC MATERIALS FROM LAMINATED ARTICLES

Tadao Watanabe, Tokyo, Japan, assignor to Toppan Printing Co., Ltd., Japan

Filed Jun. 20, 1978, Ser. No. 917,351
Int. Cl.[2] B02C *23/08;* **B32B** *31/18*
U.S. Cl. 241—14 **12 Claims**



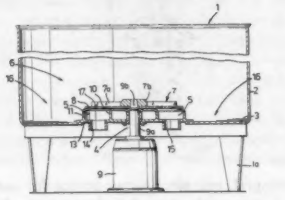
1. A method for separating and recovering the plastics contained in multilayer plastic articles comprising a plurality of layers of plastic components, said method comprising heating said multilayer plastic articles, crushing said heated plastic articles by the application of shearing, impact or tearing force so as to peel the layers of said plastic articles and produce comminuted pieces of said separate plastic components, and separating said comminuted pieces of each of said separate plastic components from each other.

4,199,110

PROCESS AND APPARATUS FOR DISINTEGRATING WASTE PAPER WHILE SEPARATING METALLIC PARTICULATE MATERIAL PRESENT IN THE PAPER

Erik F. Eriksson, Johanneshov, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Oct. 7, 1977, Ser. No. 840,422
Claims priority, application Sweden, Oct. 7, 1976, 7611116
Int. Cl.[2] B02C *13/18, 13/282, 13/284*
U.S. Cl. 241—20 **9 Claims**

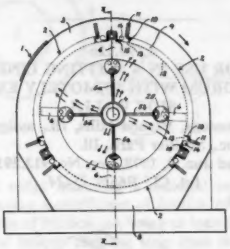


1. A process for disintegrating waste paper containing metallic and other particulate material appreciably heavier than the paper, and separating the heavier material from an aqueous slurry of disintegrated paper fibers and particles by centifugal force and gravity settling, comprising disintegrating waste paper in a vessel having a disintegrating rotor at the bottom of the vessel in the presence of water while imparting a vortical flow to the resulting slurry, of a velocity sufficient to throw relatively heavy particulate material towards the outer periphery of the resulting vortex, while lighter waste paper fibers and particles move towards the inner periphery of the vortex; establishing a relatively quiescent continuous annular zone surrounding and below the rotor and outer periphery of the vortex, all of which zone including the entry thereto is below the rotor; permitting the heavier particulate material to settle out and collect in that zone; and withdrawing a slurry of waste paper fibers and particles from an inner peripheral portion of the vortex above the rotor, relatively free from heavier metallic particulate material.

4,199,111
BEATER MILL

Martinus T. Schmidt, Kolding, Denmark, assignor to Schmidt & Sonner Maskinfabrik A/S, Kolding, Denmark

Division of Ser. No. 703,242, Jul. 7, 1976, Pat. No. 4,101,080.
This application Jul. 14, 1978, Ser. No. 924,663
Claims priority, application Denmark, Jul. 11, 1975, 3174/75; Jul. 11, 1975, 3176/75; Jun. 24, 1976, 2841/76
Int. Cl.[2] B02C *13/288*
U.S. Cl. 241—55 4 Claims

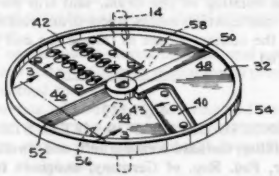


1. A beater mill comprising
a cylindrical housing,
a rotor mounted for rotation in said housing, said rotor including
a hub and
at least two fan blades arcuately spaced about the rotor axis, said fan blades each having
a plurality of beaters thereon, the beaters of one of said fan blades being axially offset with respect to the beaters of another of said fan blades,
said cylindrical housing including a peripheral screen area, the outer portions of said fan blades having an axial width corresponding to the width of said peripheral screen area,
inlet means for delivering both air and solids to said housing coaxially with said rotor, and
said fan blades being substantially flat and including an enlarged portion adjacent and closer to the rotary axis of the fan blades than the beaters and substantially wider as measured in the rotary plane than the width of said fan blades and said beaters.

4,199,112
PROCESSOR AND BIDIRECTIONAL CUTTING DISC

James O. McLean, Milford, Conn., assignor to General Electric Company, New York, N.Y.

Filed Oct. 25, 1978, Ser. No. 954,552
Int. Cl.[2] B02C *18/18*
U.S. Cl. 241—92 12 Claims

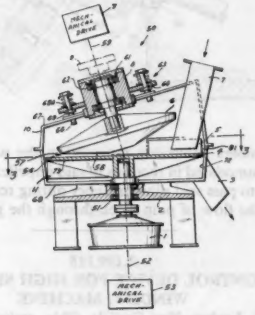


1. In a food processor having a power base and lid-covered bowl thereon, a cutting disc rotated by shaft means extending into and terminating in said bowl, and means providing shaft rotation in each direction, an improvement in said disc comprising,
a first cutting member on the disc surface facing in the direction of a selected shaft rotaton and,
a second cutting member on the said disc surface facing opposite the first cutting member,
whereby one of said members performs a cutting operation in either direction of disc rotation while the other member is rendered inoperative.

4,199,113
DISC-TYPE APPARATUS FOR CRUSHING HARD MATERIALS

Ivan V. Genev, Sofia, Bulgaria, assignor to DSO "Cherna Metalurgia", Sofia, Bulgaria

Continuation-in-part of Ser. No. 661,489, Feb. 26, 1976, abandoned, and Ser. No. 795,153, May 9, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,154
Claims priority, application Bulgaria, Feb. 26, 1975, 29087
Int. Cl.[2] B02C *19/00*
U.S. Cl. 241—167 7 Claims



1. In an apparatus for crushing hard materials, a housing, a first substantially planar crushing disc supported for rotation in the housing about a first vertical axis, a second substantially conical crushing disc supported in the housing above the first disc for rotation about a second axis oblique to the first axis, the second disc cooperating with the underlying first disc to define a crushing zone therebetween, means for rotating the first disc about the first axis, inlet means supported in a first portion of the housing spaced from the crushing zone for introducing hard material to be crushed onto the first disc to be conveyed downstream through the crushing zone as the first disc rotates, first rake means secured to the housing and disposed in the path of rotation of the first disc downstream of the crushing zone and upstream of the inlet means for diverting material crushed in the crushing zone from the first disc toward the bottom of the housing, and outlet means supported by the housing for discharging crushed material directed toward the bottom of the housing by the first rake means.

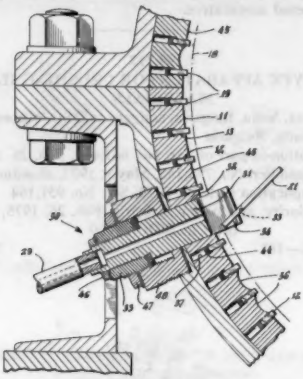
4,199,114
APPARATUS FOR PRODUCING DISINTEGRATED MATERIAL, PREFERABLY PULP

Arne Asplund, Tykovagen 20, Lidingo 3, Sweden

Filed Mar. 17, 1978, Ser. No. 887,537
Int. Cl.[2] B02C *18/18*
U.S. Cl. 241—246 2 Claims

1. In a drum refiner for refining lignocellulosic pulp stock which is conveyed into a statonary cylindrical drum and propelled in a linear direction therein in a pulsating fashion by a co-axial rotor comprising a plurality of impeller wings having a leading face and a trailing face, which attack the pulp stock at an angle in a wedging action as it is pushed ahead by the leading faces of the impellers to induce in the pulp stock internal frictional shear forces while it is being forced through a gap clearance defined between the free ends of the impeller wings and a series of spaced shear members arranged axially along the interior wall surface of the drum, the improvement in

which said shear members comprise staves having a substantially rectangular cross section and being detachably mounted in slots in the wall of said drum so as to provide for variations in the gap clearance and additionally comprising a plurality of



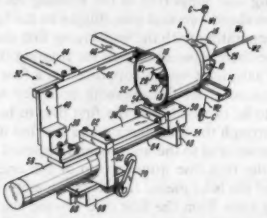
plow members adjustably mounted in the wall of said drum and accommodated in recesses in said impeller wings to permit the latter to pass said plow member during rotation to thereby regulate the flow of pulp stock through the gap clearance.

4,199,115

WIRE CONTROL DEVICE FOR HIGH SPEED STATOR WINDING MACHINE

Richard N. Lachey, New Carlisle, Ohio, assignor to The Globe Tool and Engineering Company, Dayton, Ohio

Filed Apr. 18, 1978, Ser. No. 897,481
Int. Cl.[2] H02K *15/085*
U.S. Cl. 242—1.1 R **3 Claims**



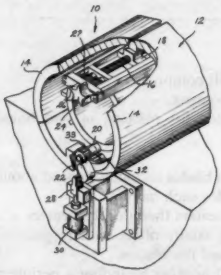
1. In a 2-pole stator winding machine of the type including winding forms adapted to be connected to a stator at a winding station and adapted to be removed from said winding station and further including a winding shuttle having a pair of substantially radially extending wire guide needles reciprocated relative to surfaces of said stator and said winding forms about which coils of wire are to be wound and oscillated about its axis of reciprocation to draw a pair of wires from wire sources and wind the coils, the improvement comprising wire control means for restricting the ballooning of wires from said needles, said wire control means comprising a shield positioned immediately adjacent said winding station, said shield having inner surface portions parallel to said axis of reciprocation defining a cavity opening to said winding forms and said shuttle, said inner surface portions confronting the end portion of the path of reciprocatory movement of said shuttle and those of said winding forms most remote from said wire sources and being of such extent that the axes of said needles, if extended, would intersect said surface portions during substantially any part of the oscillatory motion of said shuttle occurring when said shuttle is at said end portion of the path of its reciprocatory movement and said inner surface portions being sufficiently continuous that any sections of wires exiting from said needles and engaging said shield contact said inner surface portions, said wire control means further comprising means mounting said shield for movement relative to said winding forms toward and away from said winding station and means for moving said shield from a position immediately adjacent said winding station to a position remote from said winding station to permit removal of said winding forms from said winding station.

4,199,116

RECOILER FOR USE IN A SLITTING LINE HAVING A ROTATABLE DRUM WITH REMOTELY EXPANDABLE SIDE WALLS

Douglas S. Matsunaga, Vernon Hills, Ill., assignor to Braner Enterprises, Inc., Schiller Park, Ill.

Filed Jun. 8, 1978, Ser. No. 913,591
Int. Cl.[2] B65H *75/24*
U.S. Cl. 242—63 **10 Claims**



1. In a recoiler for use in a slitting line for cutting sheet material including a rotatable drum having expandable side parts for varying the diameter of said drum, movable means carried by said drum and contacting said side parts for urging the side parts into progressively expandable positions wherein the diameter of said drum is increased, screw means carried by said drum for shifting said movable means upon screw means rotation to urge said side parts into progressive expandable positions, the improvement comprising a contact member secured to said screw means, trip means spacedly located from said drum for contacting said contact member upon rotation of the drum to cause rotation of said screw means whereby the diameter of said drum will increase during drum rotation, releasable gripping means carried by said drum for securing the end edge of said sheet material to the drum, contact means carried by said gripping means for releasing the gripping means upon rotation of the drum, said trip means also for contacting said contact means upon drum rotation to cause rotation of the contact means to release the end edge of said sheet material.

4,199,117

WINDING DEVICE FOR METAL STRIPS

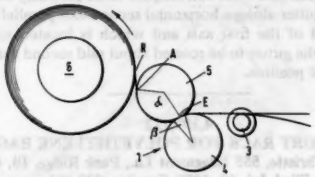
Friedrich Müller; Gerhard Kummerhoff, and Ewald Uphues, all of Hemer, Fed. Rep. of Germany, assignors to Sundwiger Eisenhutte Maschinenfabrik Grah & Co., Hemer-Sundwig, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 974,060
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759224
Int. Cl.[2] B65H *23/14*
U.S. Cl. 242—75.2 **18 Claims**

1. In a winding device for metal strips including a first roller and a second roller, the metal strip being braked between said

rollers which are pressed against one another, said first roller having an angle of wrap α for the metal strip of at least 75° and said second roller having a maximum angle of wrap β for the metal strip of 45°, the improvement comprising:

said first roller including a material on the periphery thereof having a coefficient of friction $\mu\alpha$



said second roller including a material on the periphery thereof having a coefficient of friction of $\mu\beta$, and

the coefficient of friction $\mu\alpha$ being at least 20% lower relative to the braked material strip than the coefficient of friction $\mu\beta$.

4,199,118

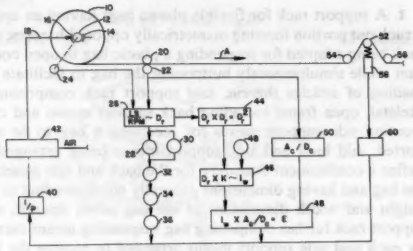
METHOD AND APPARATUS FOR CONTROLLING THE BRAKING SYSTEM FOR AN UNWINDER

Richard S. Tetro, and Gerald F. Browning, both of Fulton, N.Y., assignors to The Black Clawson Company, Fulton, N.Y.

Filed Jan. 10, 1979, Ser. No. 2,405

Int. Cl.[2] B65H *25/22, 59/00*

U.S. Cl. 242—75.44 **10 Claims**



1. Apparatus for controlling the braking action of a roll of web material supported for rotation on an unwinding device, comprising:

means for continuously measuring line speed and rate of change thereof of said web downstream of said unwinding device and providing an output signal proportional to said line speed;

means for continuously measuring rotational speed of said roll of web and providing an output signal proportional to said rotational speed;

means receiving said output signals from said line speed and rotational speed measuring means and combining said signals to produce an output signal proportional to the diameter of said roll;

means receiving said output signal proportional to said roll diameter and producing an ouput signal proportional to a predetermined desired web tension downstream of said roll;

means receiving said output signals from said line speed and rotational speed measuring means and producing an output signal proportional to the energy in said roll;

braking means for applying variable braking force to said roll;

brake control means receiving the surmation of said output signals proportional to the roll diameter and the energy in said roll and producing an output signal to said braking means for causing said braking means to apply variable braking force thereto so as to substantially maintain said predetermined tension in said web as it is being unwound during acceleration, deceleration and constant web speed conditions.

4,199,119

WING MOUNTED RETRACTABLE AIRCRAFT UNDERCARRIAGES

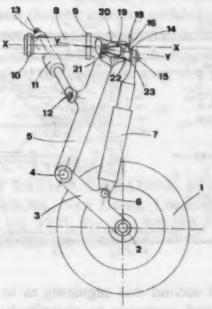
Jean Masclet, Paris, France, assignor to Messier-Hispano-Bugatti, Montrouge, France

Filed Jun. 7, 1978, Ser. No. 913,352

Claims priority, application France, Jun. 10, 1977, 77 17832

Int. Cl.[2] B64C *25/12, 25/18*

U.S. Cl. 244—102 SS **8 Claims**



1. A wing mounted retractable aircraft undercarriage with a trailing wheel comprising a rigid leg casing, pivotally mounted on the wing about a retraction axis, a rocking lever pivoted on said leg casing, supporting said wheel and mounting the lower pivot connection of a shock absorber located behind said leg casing, an upper pivot connection of said shock absorber to a lever, which said lever is pivotable on said leg casing about an articulation axis which is distinct from said retraction axis, a rod of fixed length pivoted at one end to said lever and at the other end to a fixed position on the wing, so that upon retraction of said undercarriage by the action of a retraction jack, said rod causes rotation of said lever with respect to said leg casing, which rotation, by traction of the expanded said shock absorber causes pivoting, with respect to said leg casing, of said rocking lever mounting said wheel towards said retraction axis, and thus an overall shortening of said undercarriage and wherein in said undercarriage down position, said articulation axis and the axis of articulation of said rod to said lever are situated below and on the retraction side of said retraction axis in relation to the aircraft and said rod is pivoted to said wing at a position located above and on said retraction side of said retraction axis in relation to the aircraft in such manner that, during retraction, the extent of the rotation of said lever with respect to said leg casing is greater than the extent of the rotation of said leg casing with respect to said wing thereby to obtain an increased shortening.

4,199,120

FOLDING, PLUG TYPE AIRCRAFT DOOR

Burton Bergman, Kent, and Brian P. Lawrence, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 1, 1977, Ser. No. 847,574

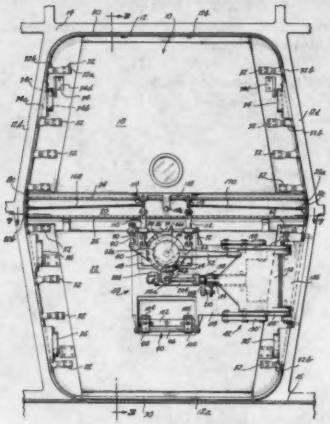
Int. Cl.[2] B64C *1/14*

U.S. Cl. 244—129.5 **18 Claims**

15. A door assembly for an opening in a wall, said opening having a periphery generally configured in the shape of a

polygon having at least four sides, the sides of said polygon on either side of a line joining two nonadjacent apexes of said polygon being convergent, said assembly comprising:

a door panel having first and second end segments and junction means for joining said first and second end segments, said door panel having a peripheral edge portion that conforms to the shape of said polygon when said door is covering said opening, said first and second end segments having adjacent edge portions that lie generally parallel to said line, said junction means so joining said



first and second end segments as to align said first and second end segments to completely close said opening when said door is covering said opening,

actuating means associated with said first and second end segments and said junction means for moving said adjacent edge portions of said first and second and segments in generally opposing directions transverse to said line to foreshorten said door panel in a direction transverse to said line and thereby to space the peripheral edge portions of said door panel from the periphery of said opening.

4,199,121

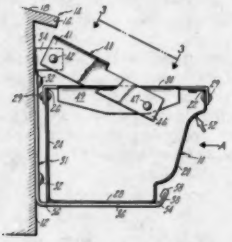
INVERTIBLE RAIN GUTTER MOUNTING APPARATUS

Alfred F. Le Febvre, 67 Prospect St., Bloomfield, Conn. 06002

Filed Mar. 28, 1979, Ser. No. 24,792

Int. Cl.[2] E04D *13/06*

U.S. Cl. 248—48.2 **8 Claims**



1. A rain gutter support system adapted to be secured to a gutter having a front, rear, and bottom wall and to the face of a building to which the gutter is to be installed, and which permits the gutter to be inverted, said system comprising:

a stationary supporting arm adapted to be secured to the face of the building and to extend outwardly therefrom under and in supporting contact with the gutter when the gutter is in its normal upright position;

bracket means including a fixed element and a rotatable link, said fixed element adapted to be secured to the face of the building, said link including a front end and a rear end, said rear end being pivotally attached to said fixed element along a horizontal first axis parallel to the length of the gutter, and said front end adapted to be pivotally attached to the gutter along a horizontal second axis parallel to and forward of the first axis and which is located so as to permit the gutter to be rotated about said second axis to an inverted position.

4,199,122

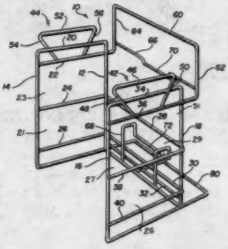
SUPPORT RACK FOR POLYETHYLENE BAG

Eugene P. Christie, 555 Edgemont La., Park Ridge, Ill. 60068

Filed Jul. 10, 1978, Ser. No. 923,098

Int. Cl.[2] A63B *55/04*

U.S. Cl. 248—97 **3 Claims**



1. A support rack for flexible plastic bags having an upper, struck out portion forming diametrically opposed handles, said rack being adapted for suspending a plastic bag in open condition while simultaneously buttressing the bag to facilitate the loading of articles therein, said support rack comprising: a skeletal, open frame including back support means and confronting side support means for receiving a bag to be supported, said back and side support means being arranged to define a confinement boundary for the back and side panels of the bag and having dimensions generally corresponding to the height and width dimensions of the bag when opened, said support rack further comprising bag suspending means carried by each said side support means arranged to receive the bag handles for maintaining the bag in a suspended, opened condition, said bag suspending means comprises an inverted substantially U-shaped rod member affixed to a respective one of said side support means, each said inverted U-shaped rod member having a horizontal portion substantially parallel to and spaced above its respective side support means and side portions converging in a downward direction for securely receiving the bag handles and for providing the rack with handles for adapting the rack for convenient portability, and rack mounting means projecting rearwardly from said back support means and having pendant coupling means for mounting said rack along the top edge of a horizontally disposed support member.

4,199,123

TRIPOD LEVELING MECHANIZATION

Morris Weber, Sherman Oaks, and Edgar M. Jaehnke, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 16, 1978, Ser. No. 934,104

Int. Cl.[2] F16M *11/38*

U.S. Cl. 248—168 **10 Claims**

1. A leveling mechanism comprising:

a mount having separated pivots;

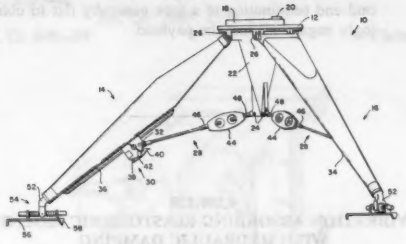
at least one leg secured to a first of said pivots and extending

from said mount and moveable in a plane passing through said first pivot;

a stationary foot pad positioned on a ground support;

a link coupled between said leg and a second of said pivots on said mount;

means coupled to said link for changing the length of said link and thereby for adjusting the level of said mount; and



means slidably coupling said foot pad to said leg for permitting relative linear movement between said leg and said foot pad and within the plane without movement of said foot pad from its ground support when the length of said link is changed.

4,199,124

IMPROVED STRUCTURE FOR CONNECTING A LEG TO A MASSIVE BODY

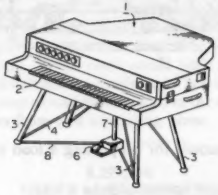
Hiroki Tachida, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Nov. 7, 1977, Ser. No. 849,507

Claims priority, application Japan, Nov. 8, 1976, 51-150297[U]

Int. Cl.² F16M *11/16*

U.S. Cl. 248—188 **12 Claims**



1. An improved mounting structure for attaching a support leg to a massive body, said mounting structure comprising:

a support leg having first and second ends and an externally threaded top portion adjacent said first end;

a fixed seat mounted on the bottom of said massive body, said fixed seat including a center portion and a rim surrounding said center portion, said rim having a first mating surface;

a detachable seat having an internally threaded tubular stay and a rim surrounding said tubular stay, said internally threaded tubular stay being adapted to threadably engage said externally threaded top portion of said support leg when said first end is inserted into said tubular stay, said detachable seat rim having a second mating surface adapted to mate with said first mating surface of said fixed seat rim when said first and second mating surfaces are pressed against one another;

said rim of one of said fixed and detachable seats including a through hole formed therein, said through hole including a larger sized contour portion and a smaller sized contour portion opening into said larger sized contour portion;

said rim of the other of said fixed and detachable seats including a projection formed thereon, said projection including an end bulge spaced from said mating surface of said other of said fixed and detachable seats by a pole, the size of said end bulge being less than said larger sized contour portion and greater than said smaller sized contour portion such that said end bulge is free to pass through said larger contour portion but is not free to pass through said smaller contour portion, the length of said pole being greater than the depth of said through hole such that said bulge may be inserted through said sized contour portion of said through hole and slid over said sized contour portion of said through hole;

said fixed and detachable seats being coupled to each other with said pole of said projection being positioned within said smaller contour of said through hole in such a manner that said first and second mating surfaces are adjacent one another; and

said support leg being threaded into said tubular stay by a sufficient amount that said first end of said support leg comes into sufficient pressure contact with said center portion of said fixed seat to cause said fixed and detachable seats to separate and thereby causing said bulge to come into firm pressure contact with a portion of said rim of said one of said fixed and detachable seats whereby a firm coupling is established between said fixed and detachable seats.

4,199,125

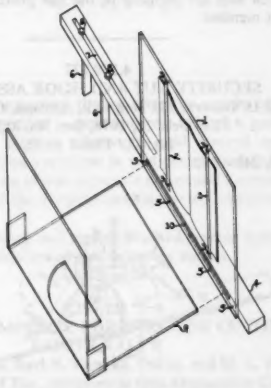
WATERPROOF BATHTUB READING STAND

Kirby Simon, 82 Edgehill Rd., New Haven, Conn. 06511

Filed Oct. 31, 1977, Ser. No. 846,935

Int. Cl.² A47B *97/04*

U.S. Cl. 248—441 A **3 Claims**



1. A waterproof bathtub reading stand, comprising:

(a) a transparent waterproof container consisting of a vertical stationary shield, capable of supporting reading material, and a moveable l-shaped transparent shield, the horizontal section of which slides back and forth through a slot in the stationary shield so as to permit the moveable shield to be retracted to allow access to the reading material and pressed forward against the stationary sheild to form the container;

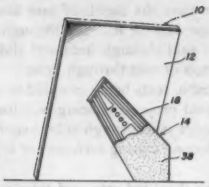
(b) said container being mounted on a bar, said bar being adapted to be placed horizontally across a bathtub and affixed to one side of the bathtub by means of a clamp consisting of two small bars that slide along a slot in the horizontal bar and are thereby adjusted to the width of the side of the bathtub and thereafter fixed in position by means of bolt-nut assemblies.

4,199,126

ONE-PIECE EASEL-SUPPORT MEMBER

Henry Komendowski, Des Plaines, Ill., assignor to Intercraft Industries Corporation, Chicago, Ill.

Filed Jul. 24, 1978, Ser. No. 927,374
Int. Cl.[2] A47B 97/04
U.S. Cl. 248—463 20 Claims



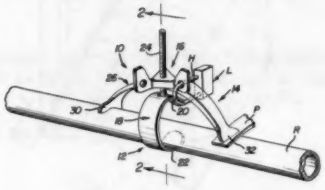
1. A one-piece easel-support member for attachment to a picture frame back or the like and being placeable in storage and use positions and comprising attachment means for attachment to the picture frame back, a stand portion hingedly connected to said attachment means, a flap portion, a link hingedly interconnecting said attachment means and said flap portion, said stand portion being movable to overlie said attachment means in the storage portion of said easel-support member, said stand portion being movable to an acute angle with respect to said attachment means in the use position of said easel-support member, and latching structure including at least one control element and at least one storage element and at least one use element, said control element being integral with one of said portions, said storage element and said use element being integral with the other of said portions, said control element being engageable with said storage element in the storage position of said easel-support member, said control element being engageable with said use element in the use position of said easel-support member.

4,199,127

SECURITY NUT AND HOOK ASSEMBLY

Richard D. Osborn, 121 Nob Hill, Ashland, Oreg. 97520

Filed Feb. 28, 1978, Ser. No. 882,277
Int. Cl.[2] F16M 13/00
U.S. Cl. 248—552 4 Claims



1. A security nut and hook assembly comprising, in combination:

(a) hook-forming means for engaging a rail of a car top carrier;

(b) clamp means for securing a payload to the rail of the carrier; and

(c) retaining means attachable to the hook-forming means and the clamp means for biasing the hook-forming means and the clamp means toward one another against the rail of the carrier and retaining the assembly on the carrier, wherein the hook-forming means is removable from the carrier, and the hook-forming means includes, in combination:

(1) a member in the shape of a "C" having a pair of legs extending toward, but spaced from one another; and

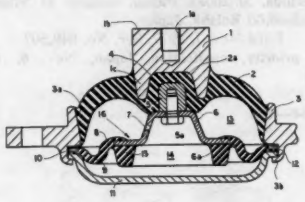
(2) a screw threaded shank connected to one of the legs of the member and arranged extending from the other of the legs thereof, wherein the clamp means includes a curved, longitudinally extending strap provided with a hole centrally of the longitudinal extent of the strap, the threaded shank being arrangeable in the hole between the retaining means ad the member of the hook-forming means and the strap having two longitudinally spaced ends, one end terminating in a curved bifurcated end surface contoured to fittingly engage the rail, the second end terminating in a foot generally flat to clampingly engage against the payload.

4,199,128

VIBRATION ABSORBING ELASTOMERIC MOUNT WITH HYDRAULIC DAMPING

Johannes van den Boom, Kösching; Gert Salwesky, Lenting; Frank-Uwe Gödel, Ingolstadt, and Wilfried Leitner, Eichstatt, all of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,371
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736188
Int. Cl.[2] F16F 15/00
U.S. Cl. 248—562 5 Claims



1. A yieldable mount for supporting a load on a structure, comprising:

a rigid mount core connectable to a load;

a flange connectable to said structure;

a yieldable support wall connected to said core and to said flange;

a further wall connected to said flange and defining with the first-mentioned wall a chamber completely filled with a damping liquid;

a movable wall in said chamber subdividing same into two compartments and formed in part as a roll bellows having a wavy cross section, said movable wall being provided with at least one throttle orifice communicating between said compartments for permitting liquid flow there between to dissipate energy and damp low-frequency vibrations; and

means connecting said movable wall to said core for displacement of said movable wall with said core, said movable wall having a stiffness such that relatively low-frequency vibrations between said load and said structure result in pressure equilibration between said compartments primarily by liquid transfer through said orifice while large-pressure differentials between said compartments representing high-frequency vibrations are equilibrated primarily by deformation of the wavy movable wall.

4,199,129

ARRANGEMENT FOR THE MANUFACTURE OF SYNTHETIC PLASTIC MATERIAL HOLLOW BODIES

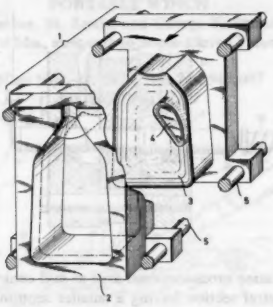
Rainer Fischer, Postrasse 39, 3530 Warburg 2, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,555

Claims priority, application Fed. Rep. of Germany, May 6, 1977, 2720448

Int. Cl.[2] B29C *1/14, 17/07*

U.S. Cl. 249—58 4 Claims



1. A blow mold for producing bottles or similar hollow containers from parisons of synthetic plastic material, comprising two mirror-symmetrically arranged blow mold halves movable toward and away from each other normal to a separating plane of the mold between a closed and an open position, each of the mold halves comprises an outer mold part having an inner endless face defining in the closed position of the mold halves part of a mold cavity for forming a bottle and an end face located in the closed position of the mold halves in said separating plane and abutting against a corresponding end face of the outer mold part of the other mold half; and an inner mold part having an outer endless face guided for independent movement relative to the respective outer mold part in said inner endless face of said outer mold part, and a concavely curved end face extending transverse to said inner endless face thereof and having an end edge spaced in the closed position of the mold halves from said separating plane.

4,199,130

VALVE ARRANGEMENT

Kurt Stoll, Esslingen, Fed. Rep. of Germany, and Jan R. deFries, Zürich, Switzerland, assignors to Festo-Maschinenfabrik Gottlieb Stoll, Esslingen, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,534

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712491

Int. Cl.[2] F16K *31/126, 31/02*

U.S. Cl. 251—29 7 Claims

1. A valve arrangement having at least a main valve including an inlet and an outlet and a pilot valve assembly, comprising:

a housing for housing said main valve and said pilot valve assembly and having first means defining a second inlet for a pressurized fluid and second means defining a second outlet;

a chamber in said housing;

a flexible diaphragm in said chamber dividing said chamber into a control chamber and a pressure chamber, said pressure chamber and said control chamber being each connected in fluid circuit with said pressurized fluid supplied to said second inlet through a constant cross section throttle opening;

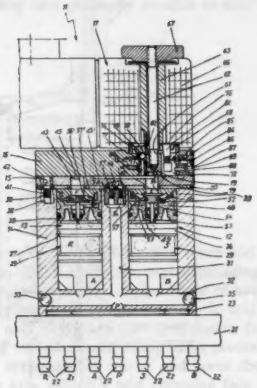
analogue pressure regulator means for maintaining the pressure of said pressurized fluid in said control chamber constant independent of pressure variations in the pressure of said pressurized fluid, said analogue pressure regulator means comprising:

(a) third means defining a control opening providing fluid communication from said control chamber to said second outlet;

(b) armature means disposed in said second outlet;

(c) pivot means pivotally supporting said armature means for movement into and out of blocking relation with said control opening and resilient means for resiliently biassing said armature means so that its effective weight adjacent said control opening is approximately nil and is generally in a floating relation relative to said control opening wherein pressure variations in said pressurized fluid will effect a pivoting of said armature means and a consequent maintaining of the pressure in said control chamber constant;

electric magnetizing coil means mounted on said housing in magnetizing relation to said armature means.



4,199,131

ACTUATOR MODULE FOR WIRELINE CUTTING SAFETY VALVE

Israel Boski, Plano; Karl N. Tunstall, Dallas, and M. L. Warren, Carrollton, all of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

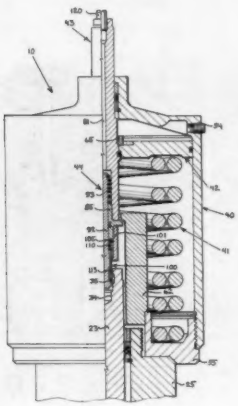
Filed Sep. 23, 1977, Ser. No. 836,154

Int. Cl.[2] F16K *31/122, 31/00;* F16L *37/18*

U.S. Cl. 251—62 3 Claims

1. An actuator module for use with a wire cutting safety valve to provide supplementary force to said safety valve for cutting a wireline when said wireline is disposed through said safety valve when said safety valve is open, said actuator module comprising: an actuating means for applying a reciprocating force to a valve stem of said safety valve sufficient to cut said wireline when said safety valve is closed, said actuating means including a piston rod having a bore therethrough and means connecting said valve stem of said safety valve with said piston rod, said piston rod and stem connecting means being the sole means for coupling said actuator module with said safety valve stem for holding said module on said safety valve and including a locking collet supported at a first end of said bore in said piston rod for releasably coupling said piston rod

with said valve stem, a tubular adaptor secured in said first end of said bore of said piston rod; a collet operator rod slidably disposed through said adaptor in said bore of said piston rod, said operator rod having an operator foot extending from said piston rod at said first end of said housing, said operator foot having a first collet locking surface and second collet release surface spaced from said first collet locking surface; a spring around said operator rod within said bore of said piston rod, a first end of said spring engaging an end of said tubular adaptor; means defining an operating shoulder on said collet operator rod engaging the other end of said spring whereby said spring biases said collet operator rod toward said first end of said piston rod bore in a collet locking direction; seal means be-



tween said adaptor and said collet operator rod for forming a fluid tight seal around said operator rod whereby hydraulic pressure introduced into said piston rod bore at a second end of said bore forces said collet operator rod in a direction toward a collet release position; a locking collet having a plurality of circumferentially spaced locking fingers supported on said operator rod for releasably engaging a locking recess in a valve stem of said safety valve, said collet fingers being movable along said rod between locking positions at said first locking surface on said rod and release portions along said release surfaces of said rod; a spring connected around said locking collet having an end engageable with said locking collet for biasing said locking collet away from said adaptor toward a locking position along said collet operator rod; and a retainer sleeve on said adaptor around said locking collet for holding said locking collet with said adaptor.

4,199,132

HIGH-PRESSURE REMOTE-CONTROLLED VALVE

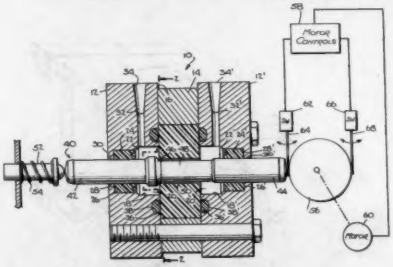
Charles F. deMey, II, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 17, 1978, Ser. No. 934,643
Int. Cl.[2] F16K *31/04*
U.S. Cl. 251—134 **12 Claims**

1. A high-pressure, remote-controlled valve comprising:

a valve body enclosing an inlet chamber, a central bore, and an outlet chamber; said valve body including first and second end plates, each having large, intermediate, and small coaxial bores, a passage extending radially from its periphery to the chamber formed by said bores, and an annular recess on its inner face; a central member having said central bore formed therein and abutting said inner faces of said end plates; first and second sealing means compressed in said annular recesses by said central member; and retaining means operative to hold the inner faces of said end plates in tight abuttment with the opposite sides of said central member;

a plunger, having first and second end sections extending from said outlet and inlet chambers, respectively, to the exterior of said valve body, a valve member positioned in one of said chambers adjacent an opening to said central bore, and a central section extending from said valve member through said central bore, said end sections hav-



ing the same cross-sectional area as said central bore, and said central section having a smaller sectional area than said end sections;

first and second sealing means surrounding said first and second end sections, respectively, within said outlet and inlet chambers, respectively; and

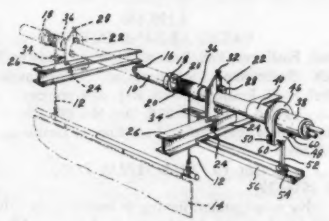
control means operative, when actuated, to selectively move said valve member against or away from said opening to said central bore.

4,199,133

BATTENS SYSTEM FOR RAISING AND LOWERING SCENERIES ON A STAGE

Pierre Gagnon, 5637 Wilderton St., Montreal, Canada (H3T 1S1), and Pierre Laforest, 1945 Bruxelles St., Montreal, Canada (H3T 1S1)

Filed Mar. 9, 1978, Ser. No. 885,068
Int. Cl.[2] B66C *23/60*
U.S. Cl. 254—141 **8 Claims**



7. A battens system comprising:

(a) a generally horizontally disposed elongated roller upon which at least one cable for supporting a scenery or other load is wound;

(b) a reversible motor having a driving shaft secured to an end of said roller to rotate said roller in either one of two directions;

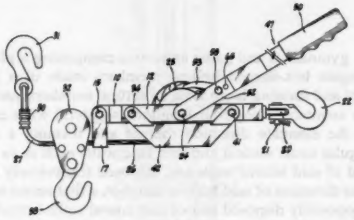
(c) bearing assemblies spaced along said roller for supporting said roller at spaced zones along the length thereof, each bearing assembly including a support and roller bearings carried by said support and engaging the outside surface of said roller at spaced points around said roller and rotatably supporting said roller, said roller bearings being mounted on axes located at a predetermined angle with

respect to the axis of said roller, said angle selected so that rotation of said roller causes said roller bearings to move said roller longitudinally at each turn by a distance equal to the pitch of the cable wound on or unwound from the roller, said reversible motor has an arm secured to the motor housing and where the arm is slidably supported along a fixedly supported guide means extending parallel to said roller and functioning to prevent rotation of the motor housing.

4,199,134
PORTABLE WINCH

Francis L. Kerber, St. Louis, and George E. Durbin, Chesterfield, both of Mo., assignors to Seven-Eleven Patents, Inc., St. Louis, Mo.

Filed Nov. 22, 1978, Ser. No. 963,007
Int. Cl.² B66D *3/02*
U.S. Cl. 254—164 **7 Claims**



1. In a portable winch having a drum and ratchet wheel mounted upon a frame for rotation about an axis, a hand lever pivoted upon the frame for rotation about the axis, tension-transmitting means wound upon the drum, a releasable stop pawl pivotally mounted upon the frame and engaging the ratchet wheel for permitting unidirectional rotation of the drum, the improvement comprising:

(a) a ratchet dog pivoted upon the hand lever for movement between an operative position engageable with the ratchet wheel and an inoperable position clearing the ratchet wheel during the pivoting of the hand lever about the axis, the ratchet dog including a projection, and

(b) a spring means fixed to the hand lever and extending transversely of the dog projection, the spring means selectively engaging one side of the dog projection for biasing the ratchet dog into the operative position, and selectively engaging the opposite side of the dog projection for biasing the ratchet dog into the inoperative position.

4,199,135
FOLDABLE WORKBENCH

Rudolf Wöhrle, Rieden; Roland Unterstab, Schnuttenbach, and Herbert Köber, Kotz, all of Fed. Rep. of Germany, assignors to Firma Alois Köber KG, Grosskotz, Fed. Rep. of Germany

Filed Jul. 11, 1978, Ser. No. 923,699
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734343
Int. Cl.² B23Q *3/02*
U.S. Cl. 269—100 **31 Claims**

1. A workbench comprising:

two rigid plates each having a substantially planar surface and each formed with a plurality of bores centered on respective bore axes and substantially perpendicular to the respective surface;

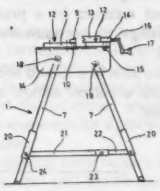
a pair of horizontally spaced support elements;

means fixedly securing said plates to said support elements with said plates spaced from each other and said surfaces coplanar to form a work surface;

a plurality of legs mounted on said support elements and each displaceable between a folded-up position lying against said plates and a folded-down position extending downwardly from said plates;

at least one holding block having a block peg engageable in any of said bores with said block lying on said work surface and having at least one holding face generally parallel to said block peg and transverse to said work surface when said block peg is engaged in one of said bores, said block being pivotal when said block peg is engaged in one of said bores about the respective bore axis, whereby said holding face can be directed in any desired transverse direction generally parallel to said work surface by pivoting said block about the bore axis of the bore in which said block peg is engaged;

a clamp having a stationary part provided with a clamp peg engageable in any of said bores with said stationary part on said work surface, a movable part provided with at least one clamping face generally parallel to said clamp



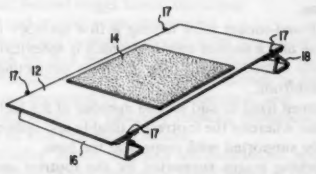
peg and transverse to said work surface when said clamp peg is engaged in one of said bores, means including interfitting guides on said parts for displacement of said movable part substantially only perpendicularly to said clamp peg relative to said stationary part, and means for relatively displacing said parts, said clamp being pivotal when said clamp peg is engaged in one of said bores about the respective bore axis, whereby said clamping face can be directed in any desired transverse direction generally parallel to said work surface by pivoting said stationary part about the bore axis of the bore in which said clamp peg is engaged and a workpiece can be clamped between said clamping face of said movable part and said holding face of said holding block; and

means for securing said stationary part of said work surface at any of said bores against displacement perpendicular to said work surface.

4,199,136
FLEXIBLE SHEET EXERCISING APPARATUS

Stanley J. Mansfield, 2255 Cahuengo Blvd., Los Angeles, Calif. 90068

Filed Jun. 3, 1977, Ser. No. 803,229
Int. Cl.² A63B *5/08*
U.S. Cl. 272—65 **4 Claims**



1. A lightweight, portable, exercising apparatus comprising a rectangular, substantially unconstrained, semi-rigid sheet member, less than 3 feet in length and less than 1½ feet in width, said sheet member being horizontally disposed and sufficiently flexible so that it deflects by approximately 3% to 5% or more of its length when a person of normal weight stands on it;

stable transverse support means for supporting said sheet

member and for permitting unrestrained vertical movement of said sheet member during an exercise program, said transverse support means having a substantial length and, extending across each of the end portions of the underside of said sheet member, for supporting said sheet member above a floor by less than 6 inches so that the center of gravity of said apparatus is close to the floor, said support means including spaced members for restraining opposite lateral movements of said sheet member;

said apparatus further including adjusting means for selectively positioning the transverse support means with respect to the sheet member, and said adjusting means including a plurality of notches at each end of said apparatus, for longitudinally shifting the position of said support means relative to said sheet member to change the distance between the support lines for said sheet member, thereby adjusting the deflection versus load characteristic of said sheet member to a predetermined plurality of discrete settings to accommodate persons of different weight; and

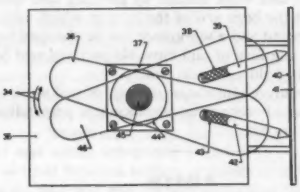
a friction means attached to said sheet member for avoiding slipping when a person stands, sits, or bounces on said sheet member.

4,199,137

APPARATUS FOR FOOT REHABILITATION

André M. Giguére, 2625 Régina St., Apt. 1008, Ottawa, Ontario, Canada

Filed Oct. 7, 1977, Ser. No. 840,413
Int. Cl.² A63B *23/04*
U.S. Cl. 272—96 **20 Claims**



1. A device for the progressive rehabilitation of the human foot after accident or malformation comprising

a base,

a ball-and-socket joint having a first member fixed to the base and a second member which is spherically rotatable with respect to the first member projecting upwardly therefrom,

a footrest fixed to said second member of the ball-and-socket joint whereby the footrest is tiltably and spherically rotatably supported with respect to the base,

a marking means supported by the footrest and extended outwardly therefrom for movement therewith relative to the base, whereby the marking means is capable of marking a curved path, and

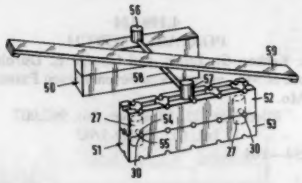
record support means fixed to the base for supporting a markable record in recording proximity to the marking means whereby a permanent record of non-linear, rotating movement of the footrest with respect to the base can be generated, the permanent record having at least two dimensions.

4,199,138

GYMNASTICS AND GAME APPARATUS

Benno Kaiser, Roxel, Fed. Rep. of Germany, assignor to Geräte-bau Albin Grunzig & Co., Eystrup, Fed. Rep. of Germany

Filed Dec. 15, 1977, Ser. No. 860,943
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1976, 7641066; Mar. 15, 1977, 2711104
Int. Cl.² A63B *9/00*
U.S. Cl. 272—113 **11 Claims**



1. A gymnastics and game apparatus comprising a plurality of elongate box-shaped hollow members made of a plastic material and forming large scale structural members, each said hollow member having four longitudinal lateral walls extending in the elongate direction thereof and forming a closed rectangular cross section and two face walls each at an opposite end of said lateral walls and disposed transversely of the elongate direction of said hollow member, a first recess in each of an oppositely disposed pair of said lateral walls extending in the elongate direction of said hollow member with said first recess spaced inwardly from the longitudinally extending edges of said lateral wall, a plurality of second recesses in each of said pair of lateral walls containing said first recess and extending transversely of the elongate direction of said hollow member and spaced apart in the elongate direction, said second recesses extending transversely across said first recess in the same said lateral wall and forming a number of recess intersections therein, said first and second recesses formed in the outwardly facing surfaces of said pair of lateral walls with the openings of said recesses facing outwardly, each said hollow member forming a plurality of mortises with each mortise extending therethrough between each of the recess intersections in said pair of lateral walls containing the first and second recesses so that the first and second recesses extend from said mortises, a number of box-shaped closed cavity wall members located in each of said hollow plastics members with said closed cavity wall members located between adjacent pairs of said second recesses, a plurality of plug connectors each comprising an axially extending stub rods adapted to fit into one of said mortises, and a pair of axially elongated tenons extending transversely of and outwardly from said stub rod and adapted to seat into one of said first and second recesses when the associated said stub rods is fitted into one of said mortises, half of the transverse cross section of each said tenon being adapted to seat in one of said first and second recesses, and said first and second recesses free of said plug connectors arranged to receive gymnastics elements having rod type end portions.

4,199,139

EXERCISING APPARATUS

Parker E. Mahnke, and Anthony J. DeMaeo, both of Glendale, Calif., assignors to Marcy Gymnasium Equipment Co., Glendale, Calif.

Filed Apr. 18, 1978, Ser. No. 897,331
Int. Cl.² A63B *23/02*
U.S. Cl. 272—118 **9 Claims**

1. In an exercising machine of the type having an upright supporting structure, upright guide means associated with said upright supporting structure, a carriage which slides vertically upward and downwardly on said upright guide means, first body-engaging means connected to said carriage for engage-

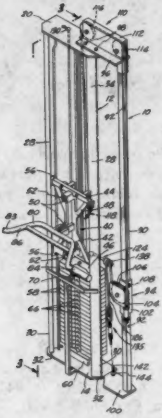
ment by a trainee, and adjustable resistance means associated with the carriage to bias the carriage and first body-engaging means in a vertically downward direction, the improvement which consists of a pull type body exercising means for performance of various exercises by the trainee comprising:

(a) guide means, disposed proximate said upright guide means and extending generally parallel thereto;

(b) a vertically adjustable first pulley means including a first pulley carried by said guide means;

(c) second pulley means disposed intermediate said vertical tracks and said guide means;

(d) third pulley means, including a fourth pulley, carried by said carriage;



(e) a cable having a first free end and a second end connected to said supporting structure, said cable being reeved around said first, second and fourth pulleys;

(f) second body engaging means connected to said first end of said cable; and

(g) securement means for fixedly securing said free end portion of said cable relative to said upright structure when the trainee is engaging said first body-engaging means whereby as said carriage and weights are raised by the trainee exerting force upon said first body engaging means, said cable will be disposed in a closed loop configuration.

4,199,140

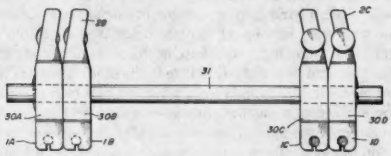
PORTABLE WEIGHT LIFT AND FORCE RESISTIVE EXERCISER

Bruno Ferretti, 16 Squanto Rd., Woburn, Mass. 01801

Filed Aug. 22, 1977, Ser. No. 826,921

Int. Cl.[2] A63B *13/00*

U.S. Cl. 272—123 **12 Claims**



1. A hollow container for retaining weight bearing material comprising:

a non-collapsible body member having at least a pair of substantially flat confronting major surfaces, and a pair of minor surfaces which join said major surfaces around a peripheral edge of said major surfaces said body member defining a first portion of an enclosure for a weight bearing material,

a non-collapsible elongated handle member having a longitudinal axis, said handle member defining a second portion of said enclosure for weight bearing material;

non-collapsible means integral with said non-collapsible body member along a lower end and supporting a portion of said non-collapsible handle member along an upper end so that said handle member and said integral means form an elongated hand opening, said longitudinal axis of said handle member being parallel to the planes in which said major surfaces lie, said means for supporting defining a third portion of said enclosure for said weight bearing material, whereby said first, second and third portions of the enclosure define a single chamber for weight bearing material,

means for receiving and securing to a shaft along an axis passing substantially through the volumetric center of said container and perpendicular to said major surfaces whereby said receiving and securing means is adapted to minimize rotation of the container about the shaft and provide a nesting arrangement for a plurality of containers to nest with each other,

means for receiving a resilient force resistor device at an end of said container opposite said handle member,

means forming an opening in said container for filling it, and closure means for sealing said opening means.

4,199,141

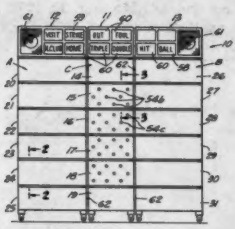
BASEBALL PITCHING SCORING APPARATUS

Abril I. Garcia, 16427 S. Brighton Ave., Gardena, Calif. 90247

Filed Mar. 27, 1978, Ser. No. 890,388

Int. Cl.[2] A63B *69/40*

U.S. Cl. 273—26 A **10 Claims**



1. An apparatus for use as an instructional aid in teaching a trainee how to accurately pitch a baseball, or the like, comprising:

(a) first and second target zones, including:

(1) first and second supporting racks;

(2) a plurality of vertically spaced apart first target blocks carried by said first and second supporting racks for reciprocal movement with respect thereto in responce to being impacted by a pitched baseball; and

(3) biasing means for yieldably resisting reciprocal movement of said first target blocks;

(b) first display means operably interconnected with said first target blocks for indicating to the senses of the trainee the impact of a pitched baseball thereupon, including:

(1) an electrically operated first lighted panel bearing the indicia "ball";

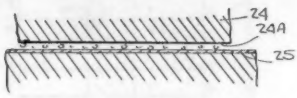
(2) first switch means actuated by reciprocal movement of said first target blocks; and

(3) electrical circuit means interconnecting said first lighted panel and said first switch means for lighting said panel upon actuation of said first switch means;

(c) a third target zone disposed intermediate said first and second target zones including:

(1) a third supporting rack;
(2) a plurality of vertically spaced apart second target blocks carried by said third supporting rack; and
(3) biasing means for yieldably resisting reciprocal movement of said second target blocks;
(d) second display means operably interconnected with said second target blocks for indicating to the senses of the trainee the impact of a pitched baseball thereupon, including:
(1) an electrically operated second lighted panel bearing the indicia "strike";
(2) second switch means actuated by reciprocal movement of said second target blocks; and
(3) electrical circuit means interconnecting said second lighted panel and said second switch means for lighting said second panel upon actuation of said second switch means;
(e) a plurality of target elements carried by said second target blocks for reciprocal movement with respect thereto;
(f) third display means operably interconnected with said target elements for indicating to the senses of the trainee the impact of a pitched baseball thereupon including:
(1) a plurality of electrically operated third lighted panels bearing various indicia;
(2) a third switch means actuated by reciprocal movement of said target elements; and
(3) electrical circuit means interconnecting said third lighted panels and said third switch means for lighting one of said third lighted panels upon actuation of said third switch means.

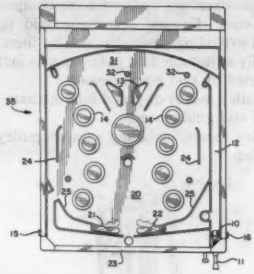
4,199,142
TOYS AND GAMES USING SUPER-HYDROPHOBIC SURFACES
Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest
Division of Ser. No. 682,146, Apr. 30, 1976, Pat. No. 4,142,724.
This application Apr. 17, 1978, Ser. No. 897,744
Int. Cl.[2] A63F *7/04;* **A63H** *23/00, 33/00;* **A63G** *21/00*
U.S. Cl. 273—109 **7 Claims**



1. A toy or game device comprising:
A a dry playing board having an exposed planar face layer formed by hydrophobic material that repels water; and
B a play element set in motion by a player to slide on the face layer of said board, said play element having an underface formed by hydrophilic material having an affinity for water, said underface being planar and being wettable by water which is repelled by said planar face layer to create a minute air film between the face layer and the play element whereby said element effectively floats on said dry board with virtually no slide resistance.

4,199,143
PINBALL FLIPPER
Joachim G. Dieckhaus, Hanover, Fed. Rep. of Germany, assignor to Bally Manufacturing Corporation, Chicago, Ill.
Filed Jan. 27, 1978, Ser. No. 872,900
Int. Cl.[2] A63F *7/10*
U.S. Cl. 273—121 A **5 Claims**

1. A pinball apparatus having a pinball, a playing surface and a flipper bar for the controlled rebound of said pinball into play on the playing surface of the pinball apparatus, said flipper bar comprising a cantilever arm pivotal about an axis on an end portion of said arm and responsive to a force for generating pivotal movement in a substantially horizontal plane about said axis, said arm having an impact side, at least two crests and at



least one trough formed on said impact side in a plane perpendicular to said playing surface, said impact side thereby pivoting about said axis for rebounding said pinball in different forward directions onto said playing surface.

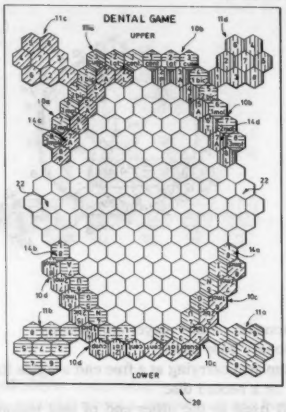
4,199,144
GOLF PUTTER
Michael A. Skelly, 1105 Laurel Dr., Lafayette, Calif. 94549
Filed Oct. 2, 1978, Ser. No. 947,999
Int. Cl.[2] A63B *53/00*
U.S. Cl. 273—164 **1 Claim**

1. A golf putter, comprising, in combination, an elongated handle shaft, a hand grip on one end of said shaft, an offset tube at an opposite end of said shaft being affixed to a club head, said head comprising a steel base in the form of a block having a front vertical face and a rear face inclined with respect to said front face, the two faces being connected by a base surface and a top surface of a smaller dimension that said base, said rear face having two spaced apart triangular depressions in cross section rendering three equally spaced triangular ribs including a center one located midway between opposite ends of said club, said front face having a recess receiving a face plate made from transparent, rock-hard plastic material, said club head including a guide groove extending across said top surface from said face plate down the center one of said ribs to said base surface.

4,199,145
DENTAL BOARD GAME APPARATUS

Frantz Gouraige, Jr., 531 E. Lincoln Ave., Apt. 2G, Mount Vernon, N.Y. 10552

Filed Jul. 18, 1978, Ser. No. 925,732
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—248 8 Claims



1. A dental board game apparatus for at least two players, comprising:

a random number generator;

a board having a playing field, defined by an array of hexagonal continuous playing spaces, having a generally arch-shaped upper and lower periphery, said upper periphery of which is bounded by two first sets of eight playing spaces, the peripheral arch arrangement of the spaces in said first two sets configured to correspond to the arch arrangement of the upper left and upper right quadrant tooth representations on an open mouth tooth diagram, and said lower periphery of which is bounded by two second sets of eight playing spaces, the peripheral arch arrangement of the spaces in said second two sets configured to correspond to the arch arrangement of the lower left and right quadrant tooth representations on an open mouth tooth diagram;

two first groups of eight playing pieces, the playing pieces of each group of which each represent a specific upper tooth of the upper left and upper right quadrants of the mouth, respectively, and two second groups of eight playing pieces, the playing pieces of each group of which each represent a specific lower tooth of the lower left and right quadrants of the mouth, respectively, each of said playing pieces being initially positionable on a playing space remote from the playing space of said first and second sets which defines the respective location of the tooth which the playing piece represents and which also defines an end space for said playing piece and being thereafter randomly movable along said playing spaces for desired eventual placement on said end playing space;

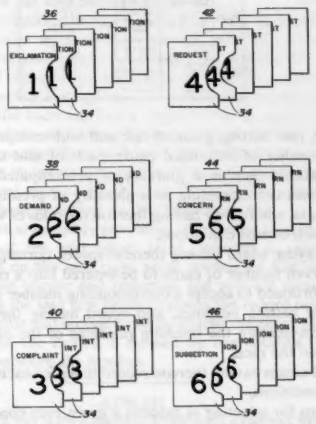
four discrete groups of eight continuous starting spaces disposed outwardly of the periphery of said playing field, the starting spaces of the first, second, and fourth groups of which each represent a starting space for one of said playing spaces representing a specific tooth in the upper left, upper right, lower left, and lower right quadrants of the mouth, respectively, with at least one of said spaces of said first, second, third, and fourth groups of said starting spaces adjoining at least one of said playing spaces defining the lower right, lower left, upper right, and upper left quadrant of the mouth, respectively;

two third sets of seven playing spaces, the playing spaces of one set of which each adjoin at least one of the playing spaces of one of said first sets of playing spaces which define the upper right quadrant of said upper ridge and the playing spaces of the other set of which each adjoin at least one of the playing spaces of the other of said first sets of playing spaces which define the upper left quadrant of said upper ridge, said two third sets collectively defining the anatomical position of the palatal surface of the mouth, and two fourth sets of seven playing spaces, the playing spaces of one set of which each adjoin at least one of the playing spaces of one of said second sets of playing spaces which define the lower right quadrant of the lower ridge and the playing spaces of the other set of which each adjoin at least one of the playing spaces of the other of said second sets of playing spaces which define the lower left quadrant of the lower ridge, said two fourth sets collectively defining the anatomical position of the lingual surface of the mouth and wherein said playing spaces of said one and said other of said third sets each represent a restarting location for one of said playing pieces of said second groups of playing pieces representing a specific tooth of the lower left and right quadrants of the mouth, respectively, and said playing spaces of said one and said other of said fourth sets each represent a restarting location for one of said playing pieces of said first groups of playing pieces representing the upper left and right quadrant of the mouth, respectively.

4,199,146
METHOD OF PLAYING A PSYCHOTHERAPEUTIC GAME

Robert A. Dato, 931 Marlyn Rd., Philadelphia, Pa. 19151

Filed Nov. 11, 1977, Ser. No. 850,563
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—249 4 Claims



1. A method of playing a game by at least two players utilizing a pack of cards in order to demonstrate the maturational level of the players, said pack including six different sets of cards, each set including plural identical cards, all of the cards of each set bearing a word connoting one manifestation of the intent variable of any communication and an associated score value indicia on the face side of the card, the rear side of all of said cards having the same appearance, said method comprising providing each player with a hand of plural randomly selected cards, one player preselecting a card, said one player making a verbal or non-verbal expression exemplifying but not synonymous with the word appearing on said preselected card, whereby each of the other players is able to associate said expression with said word through a mental determination, each of said other players selecting a card from his hand bear-

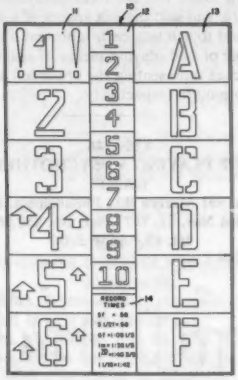
ing the word he believes was exemplified by the verbal or non-verbal expression, assigning to said one player a score value equal to the sum of the score values of the cards selected by said other players which match the preselected card and assigning to each of said other players who select a card which matches said preselected card the score value of said card.

4,199,147

HORSE RACE BETTING GAME

Charles D. Stansberry, Rte. 2, Box 199, Andersonville, Tenn. 37705

Filed Sep. 19, 1978, Ser. No. 943,861
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—274 **4 Claims**



4. A race betting game of skill and bluff comprising:

a plurality of individual cards, each of said cards having entered thereon a plurality of precomputed race finish times corresponding to a plurality of preselected conditions, and further having thereon the odds of winning as to each of said conditions,

a playing board having thereon spaces corresponding to a given number of cards to be entered into a race and proportioned to accept a corresponding number of said cards for betting purposes, said board having thereon spaces representing the finishing positions of the cards entered into the race,

card means having thereon record times for each of said race conditions,

means for selecting at random a given race condition,

a plurality of betting envelopes for each game player,

play money which may be entered into the betting envelopes,

betting indicator means for each of said players for designating whether the player is betting on a card to come in first, second, or third, and

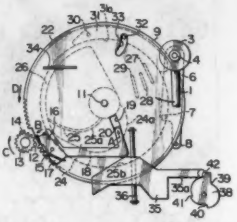
a pay-off board providing pay-outs for each bet in accordance with the denomination of the bet and the odds of winning, whereby a player can look at the finish time for a card in accordance with the selected condition, can compare said finish time with the record time, and can accordingly place his bet in his betting envelope on the card which he looked at or on one of the other cards in the game, and can indicate whether he is betting on the precomputed time on the card to come in first, second, or third.

4,199,148

AUTOMATIC RECORD PLAYER

Shinichi Minaguchi, Ehime, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 24, 1978, Ser. No. 899,215
Claims priority, application Japan, Apr. 26, 1977, 52-48890
Int. Cl.[2] G11B *17/00*
U.S. Cl. 274—15 R **5 Claims**



1. An automatic record player comprising:

(a) a stationary base plate;

(b) a pickup arm carrying at a free end a stylus for detecting signals on a record disc;

(c) a shaft fixed to the other end of said pickup arm, and rotatably held by said stationary base plate so that said pickup arm is swingable;

(d) a small gear arranged to be rotated by an electric motor;

(e) a large gear engageable with said small gear, said large gear having a non-toothed portion in which said small gear is normally positioned;

(f) means for starting the engagement between said large gear and said small gear whereby said large gear makes one complete turn at the start and stop of a record performance of said automatic record player;

(g) a pick-fixing plate carried by said shaft so as to swing simultaneously with said pickup arm;

(h) a pin mounted to said pick fixing plate;

(i) a cam plate swingable mounted in the peripheral portion of said large gear having a cam surface arranged to cooperate with said pin, said cam plate having a plurality of positions where said cam surface extends inwardly from the peripheral portion of said large gear;

(j) a post mounted to said cam plate;

(k) means, carried by said large gear, for guiding said pin during a complete turn of said large gear so as to swing said pickup arm to and from the playing position at the start and stop of a record disc performance of said automatic record player, said means comprising a first cam, a second cam unitarily mounted on said first cam, said first cam cooperating with said pin so as to swing said pickup arm from the final position of performance to the rest position, said second cam being arranged to slightly bias said pickup arm when said pickup arm is at the substantially final position of the performance toward the resting position so as to assist said first cam in swinging said pickup arm toward the rest position;

(l) a reset plate carried by said stationary base plate, and arranged to abut said post so as to reset said cam plate to a most retracted position in the peripheral portion of said large gear; and

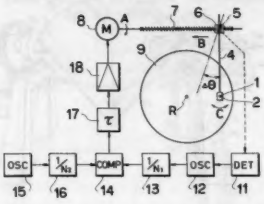
(m) a disc size setting member arranged to cooperate with said post for setting said cam plate so that said cam surface guides said pin in accordance with the size of the record disc, whereby said pickup arm brings said stylus to the lead-in groove of the record disc upon the start of a record performance.

4,199,149

RECORD PLAYER

Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 21, 1978, Ser. No. 898,778
Claims priority, application Japan, Apr. 28, 1977, 52-49731
Int. Cl.[2] G11B *3/38*
U.S. Cl. 274—23 A 6 Claims



6. A record player comprising:

a turntable rotatable about a central axis and being adapted to support a record disc concentric with said axis;

tone arm support means;

feeding means engaged with said tone arm support means for moving the latter in a path which is in parallel, spaced relation to a radius of said turntable;

a tone arm mounted on said support means for angular displacement from a predetermined angular relationship to said path;

a pick-up cartridge mounted on said tone arm and having a reproducing stylus movable linearly along said radius in response to movement of said support means in said path with said tone arm in said predetermined angular relationship thereto;

detecting means for detecting angular deviation of said tone arm from said predetermined angular relationship, including a variable capacitor having its capacitance varied in accordance with said angular deviation said variable capacitor including a pair of sector-shaped plates respectively fixed relative to said tone arm and said support means so that the areas of said plates which overlap are changed in response to said angular displacement of the tone arm;

means including a variable frequency oscillator controlled by said detecting means for providing a periodic signal having an angular characteristic varied in accordance with said angular deviation detected by said detecting means;

reference signal generating means for generating a reference signal with said angular characteristic thereof being standardized, said generating means including an oscillation circuit having a quartz oscillating element, and a frequency dividing means for frequency dividing the output of said oscillator circuit;

comparator means for comparing said angular characteristics of the periodic signal and the reference signal, respectively, and providing a corresponding control signal; and

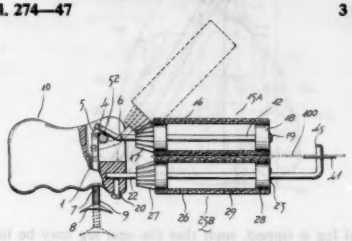
means for varying the speed of movement of said tone arm support means by said feeding means in response to said control signal so as to eliminate any deviation of said tone arm from said predetermined angular relationship and thereby ensure linear movement of said stylus along said radius.

4,199,150

NIPPER TYPE RECORD CLEANER

Hong P. Chung, No. 591 Chung Chen Rd., Wu Fong Village, Taichung Hsien, Taiwan

Filed Jan. 29, 1979, Ser. No. 7,507
Int. Cl.[2] G11B *3/58*
U.S. Cl. 274—47 3 Claims



1. A nipper type of record cleaner comprising:

a handle body containing a cavity in its upper portion, with a cylindrical passage from said cavity passing out to the lower surface of said handle body;

a first axial lever, said lever extending from the said cavity in the handle, said lever being retained by and pivoting about pivot means within the said cavity;

a first cylindrical brush mounted axially upon the extended portion of said axial lever; a second axial lever, having a right angle portion at one end, said right angle portion being of a diameter suitable to fit the center hole of a phonograph record, with the opposite end of said second lever being affixed in the said handle body directly below the said cavity; a circular plate secured to the right angle portion of the said second axial lever;

a second cylindrical brush mounted in axial alignment but eccentrically upon the said second axial lever, so that rotation of said second brush provides adjustment in the height of the upper surface of the said brush; an operating rod extending through the said cylindrical passage in the said handle body and being connected at its upper end to the end of the said first axial lever is inside the said cavity by a connecting link, said operating rod having an upper trigger at its lower extremity and being biased downward by resilient means so as to raise the said first cylindrical brush which is carried on said first lever; and

a brake button assembly providing stop means as to prevent motion of the said upper lever, wherein a record is mounted on the said right angle portion of said second lever, said trigger and operating rod provide means for lowering the said first brush to clamp the record between the said first and second brushes, so that the entire playing surface of the record is cleaned by one rotation of the record between the brushes.

4,199,151

METHOD AND APPARATUS FOR RETAINING SEALS

James W. Bartos, Wilmington, Ohio, assignor to General Electric Company, Cincinnati, Ohio

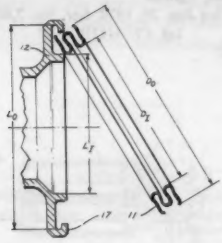
Filed Aug. 14, 1978, Ser. No. 933,257
Int. Cl.[2] F16J *15/28*
U.S. Cl. 277—1 16 Claims

1. An improved retaining structure for a continuous annular seal of the type which includes a U-shaped cross section with one leg having a predetermined radial height and adapted to sealingly engage a radial face of a ring wherein the improvement comprises:

(a) an inner annular flange extending axially from said ring radial face and

(b) an outer annular flange extending axially from said ring radial face to define a large radial gap between said outer and inner annular flanges and then radially inward toward said inner annular flange to define a small radial gap be-

tween said outer and said inner annular flanges, said small radial gap being smaller than said leg predetermined radial height but larger than a projected radial height when the



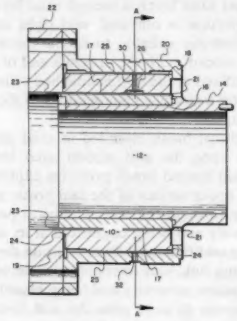
seal leg is tipped, such that the seal leg may be inserted through said small gap into said large gap by temporarily tipping and inserting successive portions of the seal leg.

4,199,152

HYDROSTATIC SEAL FOR CENTRIFUGAL PUMPS

Fritz C. Catterfeld, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 19, 1979, Ser. No. 21,739
Int. Cl.² F16J 15/46
U.S. Cl. 277—3 **18 Claims**



1. A hydrostatic seal for high-differential pressure situations, comprises:

an annular retainer plate having forward and aft ends for mounting said seal;

an annular seal housing axially and detachably mounted to the forward end of said retainer plate;

a floating seal sleeve, coaxially located along the interior wall of said seal housing;

an outer pressure gap interposed between said seal housing and said floating seal sleeve for pressure balancing said floating seal sleeve;

an annular seal sleeve coaxially located along the interior wall of said floating seal sleeve for mating with a rotating shaft;

a purge fluid gap interposed between said floating seal sleeve and said seal sleeve; and

means for pressurizing said seal.

4,199,153

SEALING ASSEMBLY FOR BLENDING APPARATUS

George J. Martin, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 22, 1979, Ser. No. 5,105
Int. Cl.² F16J 15/18
U.S. Cl. 277—4 **11 Claims**

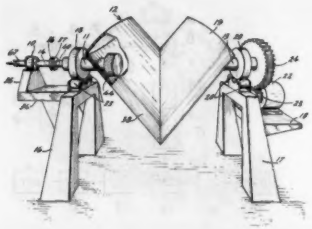
1. A sealing assembly for a blending apparatus wherein a fluid conduit is in fluid communication with the inside of said mixer comprising:

a blender housing defining an end wall;

means to rotatably support said blender including a trunion;

passage means extending through said trunion and in fluid communication with the inside of said mixer;

said passage means including an extending conduit member integrally secured to said blender and rotatable therewith;



a sealed housing member separately supported from said blender and adapted to receive an end portion of conduit member;

means to seal an open end of said conduit member inside said housing member; and

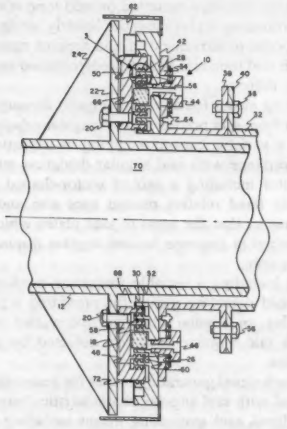
a fluid conduit in separate fluid-tight communication with the inside of said housing.

4,199,154

LABYRINTH SEALING SYSTEM

Klaus W. Mueller, Yonkers, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 28, 1976, Ser. No. 709,344
Int. Cl.² F16J 15/44
U.S. Cl. 277—53 **1 Claim**



1. A labyrinth sealing system for sealing the inner space of an apparatus defined by two interengaged members wherein one interengaged member is movable with respect to the other interengaged member, said sealing system comprising a first segment projecting from said one interengaged member and formed with a first plurality of concentrically spaced ridges, and a second segment projecting from said other interengaged member and formed with a second plurality of concentrically spaced ridges, wherein the ridges of said first segment are interposed, in noncontacting fashion, in the spaces between the ridges of said second segment, and vice versa, and wherein an

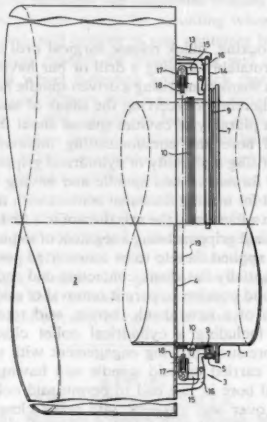
annular space is defined between said segments and an annular floating piston ring is disposed in the space between said segments.

4,199,155

SEALING MEANS FOR ROTARY VESSELS

Allon C. Day, Low Worsall, and John G. Hogan, Middlesbrough, both of England, assignors to Head Wrightson & Company Limited, Yarm, England

Filed Dec. 14, 1977, Ser. No. 860,558
Int. Cl.[2] F16J *15/36*
U.S. Cl. 277—88 **12 Claims**



1. A sealing arrangement comprising in combination a large diameter hollow rotary member having an end projecting into an apertured stationary member, said sealing arrangement including a sealing ring encircling said hollow member end, a back-up ring supporting said sealing ring, means for supporting said back-up ring from said stationary member for axial movement of said back-up ring relative to said rotary member end, a wear ring surrounding said rotary member end and being carried thereby, means for applying constant pressure to said back-up ring to urge the latter axially such that contacting interfaces of said wear ring and sealing ring are at all times held in sealing contact during relative rotation of said members, and said back-up ring is supported by means of pivotally mounted supported links attached to brackets secured to said stationary member.

4,199,156

SEALING RING FOR DRILLING TOOL CUTTERS

Joel S. Oldham, San Juan Capistrano, and Timothy L. Landerville, Lomita, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 28, 1978, Ser. No. 901,148
Int. Cl.[2] F16C *33/76*
U.S. Cl. 277—92 **19 Claims**

1. An earth boring tool for use with a pressurized down hole drilling fluid comprising:

a bit body having a journal leg with a back face and having a journal extending therefrom,

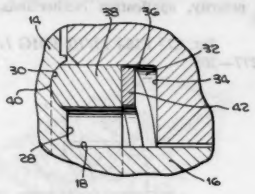
a rotary cutter having a journal cavity and mounted for rotation on said journal,

the journal cavity of said cutter providing radial clearance from said journal, whereby said cutter, in operation, tilts upon its axis and relative to said journal,

said rotary cutter having a portion defining part of a seal confined which is also comprised, in part, by said journal leg back face,

metallic sealing ring means lying in said sealed confine about said journal and including a circumferential band-like surface of revolution,

said surface of revolution of said sealing ring means being in metal-to-metal sealing contact with one of said journal leg and cutter,



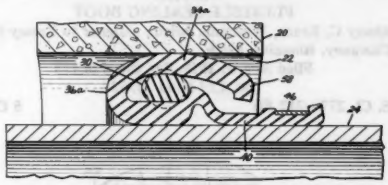
said metallic sealing ring means having an axially disposed sealing surface in metal-to-metal sealing contact with the other of said journal leg and rotary cutter, and one of said sealing surfaces in metal-to-metal contact, and the surface with which it is in contact being curved to accommodate the tilt of said cutter.

4,199,157

TWO PART SLEEVE GASKET

Harry W. Skinner, and Fouad M. Deeb, both of Fort Wayne, Ind., assignors to Press-Seal Gasket Corporation, Fort Wayne, Ind.

Filed Jun. 8, 1978, Ser. No. 913,596
Int. Cl.[2] B23P *11/02*; F16J *15/32*
U.S. Cl. 277—190 **7 Claims**



1. A gasket device for providing a seal between a pipe and a hole receiving the pipe comprising a first element of resilient elastomeric material having a generally tubular body portion and an outwardly reflexly curved flange radially spaced therefrom, said flange being generally tubular, and a second annular element of resilient elastomeric material surrounding said body portion in the radial space defined by said flange, said flange being of an axial dimension longer than the cross-sectional size of said second element, said flange being radially flexible into engagement with the wall of the hole and said second annular element being resiliently deformable upon being radially compressed between said flange and said body portion, said body portion having an annular flexible rib on said body portion intermediate the ends thereof which projects radially outwardly therefrom, and the wall thickness of said body portion opposite said flange being of a thickness greater than that on the side of said rib opposite the flanged end, the distal end portion of said flange overlying the thicker and a part of the thinner portions of said body portion.

4,199,158

PROFILED GASKET FOR SEALING TUNNEL SEGMENT JOINTS

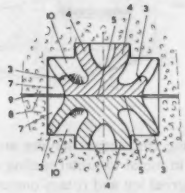
Eduard H. L. de Munck, The Hague, Netherlands, assignor to Vredestein N.V., The Hague, Netherlands

Filed Nov. 20, 1978, Ser. No. 961,903

Claims priority, application Netherlands, Nov. 23, 1977, 7712894

Int. Cl.[2] F16J 15/10; E01G 1/00

U.S. Cl. 277—205 4 Claims



1. A profiled gasket for sealing tunnel segments of tunnels built up of segments, each segment being provided with such a profiled gasket running therearound, arranged and provided in a receiving groove provided in this segment and which is made of a body of rubber or an elastically deformable synthetic material, characterized in that this body has at the one side of two of its opposite sides two outer legs, within which there are at least two inner legs, a slot being provided between each two legs, at least the upper part of the slot formed by each outer leg with the neighbouring inner leg lying within the outer plane of the other side of the body, each of the outer legs also provided with one or more holes or recesses.

4,199,159

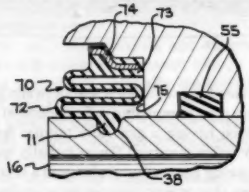
FLEXIBLE SEALING BOOT

Anthony C. Evans, Westland, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Aug. 1, 1978, Ser. No. 928,473

Int. Cl.[2] F16J 15/52

U.S. Cl. 277—212 FB 5 Claims



1. A sealing boot for use in a cylinder and piston assembly of a vehicle brake system, such piston having a peripheral groove and such cylinder having an annular wall, said sealing boot comprising, an inner bead portion for mounting in such peripheral groove of such piston, an outer annular band portion for mounting adjacent such annular wall, said band portion including a rigid annular ring and an outer elastomeric layer, wherein said elastomeric layer is compressed between said rigid annular ring and such annular wall when said sealing boot is mounted in such brake system, and an elastomeric bellows portion integrally connected between said inner bead portion and said outer annular band portion.

4,199,160

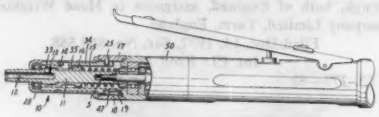
SURGICAL DRILL CHUCK

John H. Bent, Costa Mesa, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 17, 1978, Ser. No. 906,858

Int. Cl.[2] B23B 31/10

U.S. Cl. 279—30 1 Claim



1. A self-locking, quick release surgical drill chuck for retaining and rotatably driving a drill or bur having a straight, non-complex shank comprising a driven spindle having a cylindrical bore therein for receiving the shank of said drill or bur and having a plurality of cavities spaced about the circumference of said bore and communicating therewith, retaining means comprising a plurality of cylindrical grippers carried in said cavities formed in said spindle and having one substantially flat end for making frictional contact with the shank of a drill or bur in a line along the axis thereof in a first position, the other end of said grippers being a segment of a sphere to enable radial forces applied thereto to be transmitted perpendicularly to said substantially flat shank contacting end and being movable to a second position to permit removal of said shank from and insertion of a new shank therein, said retaining means additionally including a cylindrical collet closer normally biased into pressure-applying engagement with said grippers and slidably carried on said spindle and having an internal frusto-conical bore in one end to permit said collet closer to axially slide over said grippers, said collet closer having an annular ridge at its other end, and a quick release means comprising a rotatable release ring having an inwardly projecting key and a slide having a projection thereon at one end for engagement with the annular ridge on said collet closer and having a helical cam surface at its other end for sliding engagement with said projecting key carried by said release ring such that rotation of said release ring will cause said slide and said collet closer to move axially with respect to said spindle, said release ring being normally biased into a locked position, said biasing means comprising a flat leaf spring and a roller, said release ring having a groove in its interior surface into which said roller is normally biased, said biasing means requiring a force of about 3 in.lb. to overcome the action of said spring and roller against said ring.

4,199,161

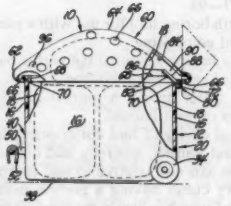
TRASH CART

Sheralyn L. Nieminen, and Duane A. Nieminen, both of 1820 Mile Pond, Lake Orion, Mich. 48035

Filed May 8, 1978, Ser. No. 903,500

Int. Cl.[2] B62B 19/00

U.S. Cl. 280—8 1 Claim



1. A trash cart, said cart being of molded plastic or similar

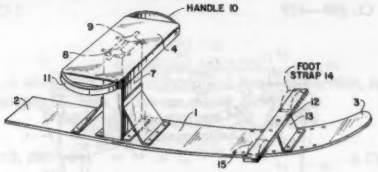
non-metallic construction and comprising a container having a bottom and substantially vertical side walls having a continuous top edge and a domed cover extending from its outer periphery to a peak and having an inwardly turned rim at the bottom thereof, the inner periphery of said rim substantially overlying said upper edge of said container wall, said rim overhanging said container wall to substantially the extent of said rim, whereby said cart has the appearance of a large mushroom or toadstool, said upper edge and said rim being formed with a front end and a rear end, said cover being hingedly connected to the rear end top edge of said container by hinge cooperating elements formed integrally with said container and said cover, the bottom rear portion of said container being molded so as to eliminate the transverse bottom rear corner thereof and to provide means for mounting wheels for transporting said cart, said bottom of said container being formed with front-to-rear runners for transporting said container on snow and said wheel mounting being such that the wheels extend below said runners only a sufficient distance to transport said cart on said wheels on hard flat surfaces without scraping said runners thereon, said container being formed at said front even with a security loop of sufficient dimension so that it can be applied over the ball of a ball-type trailer hitch, said container being further formed with or having attached thereto a flexible strap handle having a laterally-extending grip portion at the free end thereof, said cover being formed at the front overhanging portion with a mailslot-type opening to receive said grip portion, said grip portion being longer than said opening so that animals are less likely to pull said grip portion from said opening to open said cover.

4,199,162

SNOW SPORT VEHICLE

Elwood R. Joy, Hillcrest S. Shore Rte., Polson, Mont. 59860

Filed Sep. 1, 1977, Ser. No. 829,615
Int. Cl.[2] B62B *13/04*
U.S. Cl. 280—12 K **1 Claim**



1. A snow sport vehicle, comprising

a ski type runner having a slightly greater width than a ski and a substantially arcuate curvature, said runner having spaced length-extending side edges and spaced opposite first and second ends with the area of the first end being substantially planar for approximately one quarter the length of the runner and the remainder of the runner curving substantially arcuately;

a seat affixed to the runner in the area of the first end thereof and spaced from said first end for seating a rider a distance above said runner, said runner being curved to an extent whereby the second end thereof extends higher above the first end thereof than said seat; and

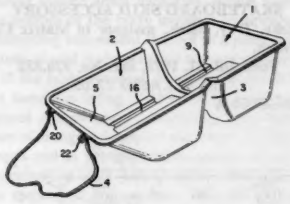
a foot rest adjustably affixed to the runner in the area of the second end thereof and spaced from said second end at a selected distance from said seat and a selected distance above said runner, said foot rest comprising a foot rest mount adjustably affixed to said runner and a foot rest cross member affixed to said foot rest mount and extending transverse to said runner and beyond the side edges of said runner, said foot rest cross member having foot straps thereon for releasably securing the feet of a rider thereto.

4,199,163

ONE-PIECE STEERABLE SLED

James Nelson, R.D. 1, Ironia Rd., Mendham, N.J. 07945; Robert J. Sainato, 10 Frances Rd., Lincoln Park, N.J. 07035, and Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07055

Filed Aug. 24, 1978, Ser. No. 936,345
Int. Cl.[2] B62B *13/00*
U.S. Cl. 280—22 **10 Claims**



9. A unitary box-like member having a bottom wall, front, rear and side walls,

said side walls and bottom wall including a section in the form of a pleat extending down both walls and across the bottom wall to normally maintain the front and rear portions of the box in spaced aligned relationship,

said pleat being sufficiently resilient to permit misalinement of said portions upon application of a sidewise force to one of said portions, and

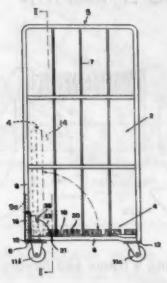
ground runner means carried by the bottom wall of said box.

4,199,164

NESTABLE ROLLER PALLET

Ake E. Sjoblom, Landstormsvagen 8A, 702 27 Orebro, Sweden

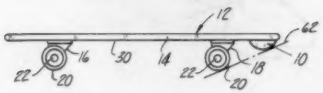
Continuation-in-part of Ser. No. 833,476, Sep. 15, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,480
Claims priority, application Sweden, Sep. 23, 1976, 7610063
Int. Cl.[2] B62B *3/02*
U.S. Cl. 280—33.99 H **14 Claims**



1. A nestable load pallet comprising horizontal connecting means, each end of said connecting means comprising vertical side frame means pivotably connected to said connecting means about a vertical axis with said side frame means at each end disposed in an opposed operating position, pallet deck means pivotably connected to said connecting means about a horizontal axis and disposed between said side frame means in a horizontal operating load supporting position, guide means and guide follower means interconnected with said side frame means and said pallet deck means for providing automatic coaction between said pallet deck and said side frame means when said pallet deck is pivoted about said horizontal axis, whereby when said pallet deck means is pivoted from said horizontal operating position to a vertical nesting position said

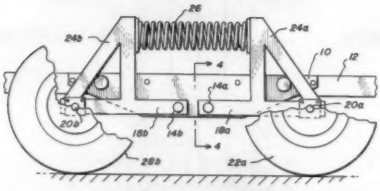
side frame means are automatically pivoted outwardly from said opposed operating position to a diverged nesting position and said load pallet is nestable with other load pallets, and whereby when said pallet deck is pivoted from said vertical nesting position to said horizontal operating position said side frame means are automatically pivoted inwardly from said diverged nesting position to said opposed operating position.

4,199,165
SKATEBOARD SKID ACCESSORY
Arthur Spitzke, Troy, Mich., assignor to Matrix Corporation, Oxford, Mich.
Filed Jul. 21, 1978, Ser. No. 926,832
Int. Cl.[2] A63O *17/02*
U.S. Cl. 280—87.04 A **9 Claims**



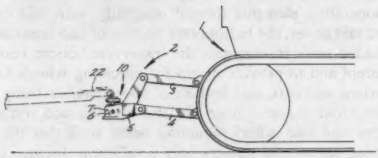
1. A skid accessory for a skateboard having an elongated board supported in substantially horizontal, elevated position by front and rear sets of ground engaging wheels, the combination comprising; a body member adapted to be mounted at an underside of said board, said body member having a semi-cylindrical surface with its axis of curvature extending transversely and parallel to said board, and rib members formed in said surface and extending parallel to said axis for movement into engagement with the gound upon tilting of said board relative to one of said sets of wheels, said body member having a flat mounting surface disposed in a plane facing oppositely from said semi-cylindrical surface and said ribs depending from said semi-cylindrical surface prependicular to said flat mounting surface.

4,199,166
TANDEM WHEEL APPARATUS
John O. Bohmer, 211 W. Second St., Brooten, Minn. 56316
Filed May 15, 1978, Ser. No. 906,088
Int. Cl.[2] B60G *11/14*
U.S. Cl. 280—96.1 **11 Claims**



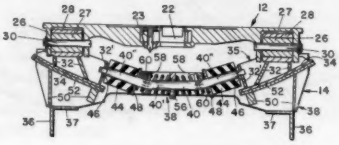
1. In a vehicle having a frame and having a first wheel, the improvement comprising:
first shaft means defining a first shaft longitudinal axis;
first connecting means for connecting the first shaft means to the frame to permit pivoting of the first shaft about radial axes and rotating the first shaft about the first shaft longitudinal axis;
a first axle support member fixedly connected to the first shaft means and extending generally radially therefrom for rotating with the first shaft about the first shaft longitudinal axis;
first axle means connected to the first axle support member at position spaced from the first shaft longitudinal axis for supporting the first wheel, the first axle means defining a first axle axis about which the first wheel may rotate; and
first adjusting means spaced from the first connecting means for adjusting the orientation of the first shaft longitudinal axis to adjust the orientation of the first axle axis with respect to a reference plane.

4,199,167
INSERTABLE HITCH FOR TRACTORS
Warren D. Points, 86998 Lorane Hwy., Eugene, Oreg. 97405
Filed Aug. 23, 1978, Ser. No. 935,886
Int. Cl.[2] B60D *1/14*
U.S. Cl. 280—415 A **3 Claims**



1. In combination,
a ripper beam adjustably supported rearwardly and transversely of a tractor, said beam having at least one socket thereon normally for the reception of a ripper tooth,
a trailer hitch in inserted engagement with said socket, said hitch having a non-socket inserted portion defining a bite area for the reception of a trailer tongue mounted eye, a hitch pin occupying a portion of said bite area for reception of a bite occupying trailer tongue eye, said pin having a hitch ball at one of its ends for alternative reception of a tongue mounted ball receiving coupler.

4,199,168
FIFTH WHEEL SUSPENSION
James H. Bush, Zeeland, and Samuel A. Martin, Holland, both of Mich., assignors to Holland Hitch Company, Holland, Mich.
Filed May 26, 1978, Ser. No. 909,615
Int. Cl.[2] B62D *53/08*
U.S. Cl. 280—439 **2 Claims**



1. In a hitch support for a trailer tilt stabilizing, tractor-trailer-connecting, fifth wheel plate, having in combination, an elongated stationary frame with arcuately concave bearing plates at opposite ends thereof, a movable frame with a pair of cradles forming a pair of convex shoes seated on said concave bearing plates, a tie rod between said cradles, a fifth wheel plate, pivotal bearings on said movable frame mounting said fifth wheel plate, said movable frame and fifth wheel plate being shiftable on said stationary frame from an intermediate position toward either of two opposite directions, and stop means between said movable frame and said stationary frame for limiting movement of said movable frame at predetermined extreme positions in either of said two opposite directions, the improvement comprising:
center plate means fixed to said stationary frame and extending generally vertically upwardly therefrom generally between said cradles; a variable force coil spring biasing means between each of said cradles and said center plate means for biasing said movable frame away from said predetermined extreme positions toward said intermediate position, said biasing means having the characteristic of applying increasing biasing force with increased move-

ment of said movable frame toward one of said extreme positions, said center plate means including generally vertically oriented opposite surfaces against which said coil spring biasing means bear such that loads imposed by said coil springs tend to impose a lateral shifting force on said stationary frame whereby a tractor operator can sense the degree of compensating movement of said movable frame toward one of said extreme positions, and whereby said fifth wheel plate when not loaded will be biased to said intermediate position.

4,199,169

ADJUSTING MECHANISM FOR A SKI

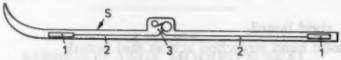
Ernst W. Guenzel, Waldperlacherstrasse 12; Otto Kabilka, Brockesstrasse 18, both of 8000 Muenchen 83, and Dieter Lissewski, Siegertsbrunner Strasse 14, 8011 Hohenbrunn, all of Fed. Rep. of Germany

Filed Aug. 8, 1978, Ser. No. 932,013

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736908

Int. Cl.[2] A63C *5/07*

U.S. Cl. 280—602 **26 Claims**



1. In an adjusting mechanism for a ski, with which one or several mass members are movable within the ski member along its longitudinal axis and can be secured within the adjusting range at any desired point, with a set wheel which can be adjusted manually and with belts which are connected to the mass members and which are moved by the set wheel, the improvement comprising wherein the belts are flat belts which are stressed for pull and compression, the free ends of which flat belts are connected to each one of the mass members, and wherein at least one first drum is connected to the set wheel, onto the circumference and from the circumference of which the flat belts can be wound and unwound.

4,199,170

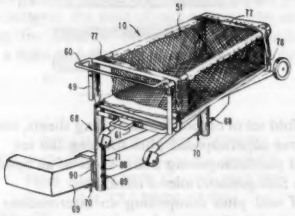
CARRIER MEANS

Betty A. Hubner, 121 Sweetwater, and James R. McNeil, Jr., 85 Appleton St., both of Saugus, Mass. 01906

Filed May 2, 1977, Ser. No. 792,920

Int. Cl.[2] B62B *3/02*

U.S. Cl. 280—641 **6 Claims**



1. Wheeled carrier for carrying a plurality of relatively small objects from one location to another comprising a collapsible body member comprising a box-like frame work comprising a bottom member, vertically disposed front and back members depending from said bottom member and pivotally connected to said bottom member pivotal toward one another, and side members pivotally connected at their ends to said end members, said side members each comprising two components connected together and capable of being disconnected from one another whereby said end members can be pivoted toward one another and toward said bottom member, a planar bottom associated with said bottom member, a collapsible netting connected to said bottom member, said end members, and said side members providing in combination with said frame work an open top body member, and a collapsible supporting structure connected to the bottom member for supporting the body member comprising two pair of elongated support members, one member in each pair being fixedly connected to said planar bottom of the body member adjacent to the said back end in predetermined spaced apart locations, means associated with said planar bottom of the body member comprising a support bar and permitting movement thereof in a plane parallel to the planar bottom of said body member toward and away from the front end of the body member, the other member in each pair of support members being connected to said support bar in predetermined spaced apart relationship, and means connecting the pairs of elongated support members together intermediate their ends and in predetermined spaced apart relationship and the members in each pair so as to allow the members to pivot with respect to one another, whereby on movement of said support bar the elongated support members are collapsed or placed in operative position as desired, and wheels attached to two of the said elongated members for forward and backward movement of the carrier, and casters attached to the other two of said elongated members providing turning motion.

4,199,171

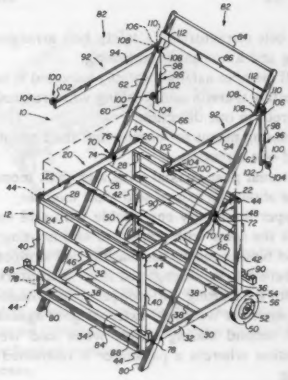
MOBILE ARTIST CART

Woodrow W. Betts, 5103 Darnell, Houston, Tex. 77096

Filed May 26, 1978, Ser. No. 909,828

Int. Cl.[2] A47B *27/14*

U.S. Cl. 280—652 **11 Claims**



1. In a collapsible, portable, mobile cart for carrying and transporting a cargo and canvas frames, comprising:

a support frame for receiving and supporting a cargo, having upper and lower support trays disposed substantially parallel to each other when said cart is in its deployed position, a set each of forward and rear tray support members connecting said upper and lower trays, and

a set of support wheels mounted at the lower portion of said support frame to enable rolling movement of said cart; and

a handle structure for maneuvering said cart, having

laterally spaced handle frame members connected to said support frame,

a handle for maneuvering said cart, and

legs for supporting said cart;

the improvement comprising:

a set of laterally spaced canvas frames supporting means having

front and rear recesses for accepting therein canvas frames, and

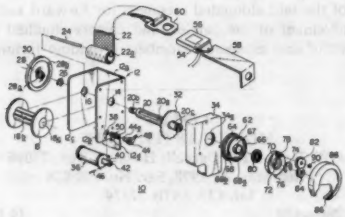
a canvas frame retaining means having first and second retaining arms, each pivotally mounted to said handle frame member so as to rotatably engage the upper surface of the canvas frame and retain same in said canvas frame recesses during transporting thereof.

4,199,172

SEAT BELT RETRACTOR WITH TENSION ELIMINATING MECHANISM

Yukio Fukunaga, Yokohama, and Ken Kamijo, Chigasaki, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 20, 1978, Ser. No. 961,949
Claims priority, application Japan, Jan. 24, 1978, 53-6534
Int. Cl.² A62B *35/00*
U.S. Cl. 280—807 **7 Claims**



1. A belt retractor for a safety belt arrangement having a webbing and a housing, comprising:

a shaft member axially rotatably mounted in said housing for winding thereon said webbing when rotated about the axis thereof in one direction;

first biasing means for biasing said shaft member to rotate in said one direction;

an external gear coaxial with said shaft member and rotatable about the axis of said shaft member;

a stopper meshingly engageable with said external gear to lock the same with respect to said housing;

second biasing means for biasing said stopper to move in a direction to be disengaged from said external gear;

actuator for causing said stopper to be brought into meshing engagement with said external gear against the force of said second biasing means when said webbing takes a position wherein a passenger is restrained by said webbing;

a discal member coaxial with said shaft member and rotatable about the axis of said shaft, member;

first and second projections respectively mounted on said external gear and said discal member to be engageable with each other when said discal member is rotated in a direction about the axis thereof with respect to said external gear;

third biasing means for biasing said discal member to rotate in said direction relative to said external gear;

a stud member mounted on said discal member at a position away from the center of said discal member;

a planetary gear journaled on said stud member;

an internal gear tightly fixed to said housing and coaxially mounted around said shaft member; and

a sun gear fixedly and coaxially mounted on said shaft member,

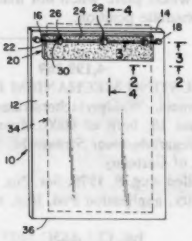
said planetary gear being operatively interposed between said internal gear and said sun gear to be meshingly engaged with the same.

4,199,173

CLIPBOARD WITH ELASTIC BAND FOR HOLDING SHEETS

James Greenlees, 399 Asharoken Ave., Northport, N.Y. 11768

Filed Jan. 29, 1979, Ser. No. 7,466
Int. Cl.² B42D *5/00*
U.S. Cl. 281—45 **10 Claims**



1. A clipboard assembly for holding a sheet material comprising:

a flat, rigid board;

an elastic band stretched across said board;

means securing opposite ends of said band to said board;

friction means on said board under said band and having an upper friction surface facing said band; and

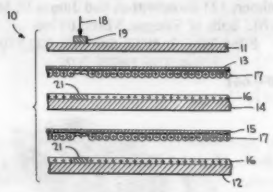
a plurality of beads mounted on said band, said beads having bores extending through said beads, said band extending through said bore, so that said beads are adjustably positioned along said band.

4,199,174

CARBONLESS MANIFOLD BUSINESS FORMS

G. Russell Sornberger, Sanborn, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Continuation of Ser. No. 686,100, May 13, 1976, abandoned.
This application Nov. 3, 1978, Ser. No. 957,580
Int. Cl.² B41L *1/36*
U.S. Cl. 282—27.5 **2 Claims**



1. A manifold set of carbonless recording sheets, comprising:

at least three superimposed plies forming the set;

one of said plies comprising a first sheet of an opaque material of a first predetermined thickness;

another of said plies comprising an intermediate sheet of tissue material of a second predetermined thickness and underlying said first sheet;

still another of said plies comprising a second sheet of an opaque material of a third predetermined thickness and underlying said intermediate sheet;

said intermediate sheet on only a back surface thereof and said second sheet on only a front surface thereof having coatings each comprising an initially colorless color forming reactive component;

the coating on said intermediate sheet comprising a plurality of pressure rupturable microcapsules containing the color forming reactive component thereof, said microcapsules being rupturable upon application of pressure to the set;

the reactive component of the coating of said intermediate sheet being in a transferable form such that the same will be transferred from said intermediate sheet to said second sheet in response to application of pressure to the set and being capable of reacting to produce a colored mark with the reactive component of the coating of said second sheet upon coming into reactive contact therewith;

said reactive component of the coating of said second sheet being in a non-transferable form such that the produced mark is presented on said second sheet;

said first sheet having a back surface with no coating thereon comprising said initially colorless color forming reactive component, and said tissue material is unavailable for accepting printing thereon, whereby said tissue material is available only for effecting a colored mark onto said front surface of said second sheet, after which said tissue material is discardable from the set; and

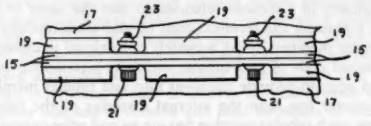
said second predetermined thickness of said intermediate sheet being less than said first predetermined thickness and less than said third predetermined thickness of said first and second sheets, respectively, whereby said tissue material effects a reduction in thickness of the set as compared to said second predetermined thickness being at least equal to either of said first and third thicknesses.

4,199,175

RIBBED FLANGE MODIFIED SEAL

Arthur J. Paukune, Hobe Sound, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 28, 1978, Ser. No. 900,950
Int. Cl.[2] F16L *23/00*
U.S. Cl. 285—405 **2 Claims**



1. In a gas turbine engine having at least two cylindrical adjacent flanged sections, a modified ribbed flange seal comprising a one-piece circular flange fixedly attached to each end of each flanged section, the front joining surface and the back surface of each of said flanges being of substantially flat configuration, a plurality of arcuate ribs with spaces between the ends thereof extending axially outward from the center of the back surface of each flange, and fastening means positioned in the spaces between the ends of said arcuate ribs on the flange for holding the adjacent flanged sections together thereby providing a tight seal therebetween with fewer fastening elements.

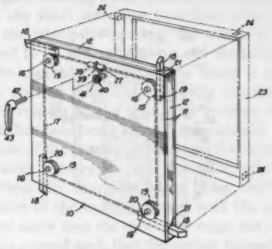
4,199,176

DEAD BOLT CABLE LOCK

Joe L. Kelly, P.O. Box 38, Conyers, Ga. 30207

Filed Jun. 5, 1978, Ser. No. 912,195
Int. Cl.[2] F02N *11/00*
U.S. Cl. 292—38 **10 Claims**

1. A dead bolt cable locking apparatus comprising a closure element, a cable loop on the closure element, guide and support means for the cable loop on the closure element, a plurality of dead bolts directly attached to the cable loop at spaced points thereon and being movable on linear paths toward and from locking positions with the portions of the cable loop to which the dead bolts are attached, guide means for the dead bolts on the closure element, and drive means for the cable loop on the closure element whereby the cable loop may be moved in opposite directions on said cable loop guide and support means, said cable loop being substantially a rectangular loop having straight stretches, one dead bolt being attached to each stretch of the cable loop in parallel relation thereto and moving in a linear path with such stretch and being disposed at right angles to the next adjacent dead bolts of said apparatus, and said guide and support means for said rectangular loop comprising a pulley at each corner region of the rectangular loop, said drive means for the cable loop comprising a rotary



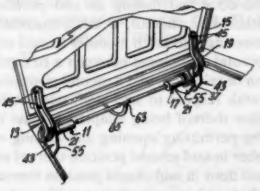
crank element on said closure element having a driving connection with said cable loop between a pair of said pulleys and said driving connection comprising a pair of spaced terminal elements on said cable loop and a forked extension on said crank element engaging between said terminal elements to move them with said cable loop.

4,199,177

LOCKING MECHANISM

Robert Danzer, Box No. 242, White Sulphur Springs, N.Y. 12787

Filed Mar. 2, 1978, Ser. No. 882,578
Int. Cl.[2] E05C *1/06*
U.S. Cl. 292—144 **11 Claims**



1. A locking mechanism for the trunk of a motor vehicle equipped with a trunk lid mounted on a pair of hinges, each of said hinges being pivotably mounted in one of a pair of channels with opposing sides facing one another, said motor vehicle including an internal combustion engine with a vacuum source, said locking mechanism comprising:

a cylinder means;

a piston means slidably mounted in said cylinder means;

an elongated rod secured at one end to said piston means;

means for mounting said cylinder means on one of the opposing sides of one of the channels with said elongated rod extendable into said channel, said means for mounting and said channel having an opening with said elongated rod slidably mounted therein;

spring means mounted within said cylinder means and engaging said piston means to extend said elongated rod into said channel to prevent pivoting of the pivotably mounted hinge within the channel on which said cylinder means is mounted;

conduit means connecting said cylinder means to said vacuum source to withdraw said piston and said elongated rod away from said channel in opposition to said spring means to permit pivoting of the pivotably mounted hinge; and

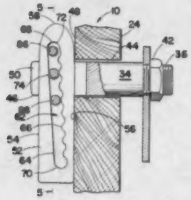
valve means located within said conduit means to open and close said conduit means.

4,199,178

DOOR LATCH

Richard A. Coats, 914 Farwood Ave., Fort Wayne, Ind. 46816

Filed Jul. 19, 1978, Ser. No. 925,999
Int. Cl.[2] E05C 3/04
U.S. Cl. 292—205 2 Claims



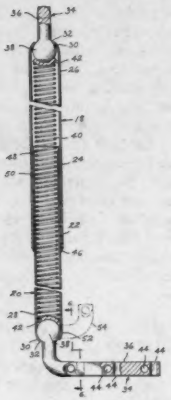
1. In combination with a door having opposite sides and edges, one of said edges being hinged to a door frame for pivotal movement of said door between an open position and a closed position closing the opening defined by said frame, said frame including a jamb engaging one side of said door in the closed position thereof adjacent the edge opposite said one edge thereof, a latch assembly comprising: a plate member secured to said jamb and extending therefrom generally parallel with said one side of said door in said closed position thereof; a stud on said plate member extending through said door frame opening, said door having an opening formed therethrough between said sides and adjacent said opposite edge, said stud extending through said opening in said closed position of said door and having an end portion projecting beyond the other side thereof; a latch member; and pivot means for connecting said latch member to said end portion of said stud for pivotal movement between a first position forming an extension of said stud, and a second position generally at a right angle with respect to said stud; said latch member in said first position thereof being adapted to pass through said opening thereby permitting opening and closing of said door, said latch member in said second position thereof engaging said other side of said door in said closed position thereof; said latch member including means cooperating with said pivot means for wedging said latch member in said second position thereof against said other side of said door in said closed position thereof; said end portion of said stud having an axially extending, open-ended slot formed therein, said latch member having a portion in each position thereof disposed in said slot, said pivot means comprising a pin extending through an opening in said latch member and across said slot; said latch member being elongated and having opposite, generally parallel side edges and opposite ends, said wedge means comprising said latch member opening, said latch member opening being elongated to form a slot having ends respectively extending toward said latch member ends, said opening being inclined with respect to said side edges of said latch member; said latch member slot having opposite sides, one of said sides being substantially straight and the other being undulating; one of said side edges of said latch member in said second position thereof engaging said other side of said door in said closed position thereof, one of said latch member ends extending axially outwardly from said end portion of said stud and the other of said latch member ends being disposed in said stud slot in said first position of said latch member, said latch member slot being inclined toward said one side edge in the direction from said one latch member end to the other, said undulating side of said latch member slot being adjacent said one side edge whereby said one latch member end extends upwardly in said second position thereof, a portion of said latch member intermediate said ends being disposed in said stud slot in said second position of said latch member.

4,199,179

SPRING BIASED PROP FOR A PIVOTED MEMBER HINGED TO A SUPPORT MEMBER

Miles K. Curry, Niles, Mich., assignor to Coachmen Industries, Inc., Middlebury, Ind.

Filed Dec. 27, 1977, Ser. No. 864,666
Int. Cl.[2] E05C 17/30
U.S. Cl. 292—338 1 Claim



1. A prop for use with a pivot member hinged to a support member, said prop having an inner tubular member and an outer tubular member, the inner of said tubular members fitting telescopically in a slidable relationship into the outer of said tubular members, the terminal ends of said telescopically fitting tubular members being arcuately constricted in diameter, the terminal ends of said tubular members terminating in an inturned edge to provide openings into said tubular members of a diameter less than the internal diameter of the tubular members, each tubular member having an end edge oppositely located from its said terminal end, two arm parts each including a shank terminating in an enlarged spherical end, said arm parts adapted for connection at their shank to said pivot member and support member, said shank of said one arm part extending with clearance through the terminal opening in said one tubular member with said enlarged spherical end fitting within said tubular member terminal end, said shank of said other arm part extending with clearance through the terminal opening in said other tubular member with said enlarged spherical end fitting within said tubular member terminal end, a helical compression spring positioned within and in association with said tubular members for biasing said tubular members toward an extended position, each end of said spring contacting an arcuate disk, said arcuate disk being interposed between the end of its contacting spring and the enlarged spherical end of an arm part to urge said arm part into slidable contact with the internal surface of the terminal end of the tubular member receiving said arm part, said inner tubular member having an outturned flange formed at its end edge, said flange extending to adjacent the inner surface of said outer tubular member, a slot formed in each of the terminal ends of said tubular members interrupting the said inturned edges, said slots for receiving the shanks of said arm parts to accommodate angular pivoted movement of said arm parts relative to said tubular members, a sleeve formed of a material providing a low coefficient of static friction, said sleeve being bonded to the inner surface of said outer tubular member adjacent its end edge, said sleeve having an inner end edge, said sleeve inner end edge engaging the outturned flange of said inner tubular member upon full extension of the tubular members wherein said engagement prevents separation of said tubular members, said sleeve forming a bearing surface to accommodate sliding movement of the

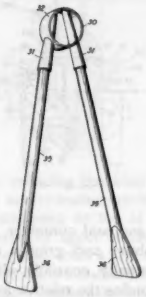
said inner tubular member within the said outer tubular member.

4,199,180

RESILIENTLY BIASED IMPLEMENT HOLDER

Joe L. Kelly, P.O. Box 38, Conyers, Ga. 30207

Filed May 10, 1978, Ser. No. 904,622
Int. Cl.[2] A47G *21/10*
U.S. Cl. 294—33 **10 Claims**



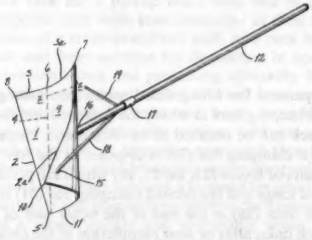
1. A biased holder for diverse rod-like implements comprising a body portion having spaced seating means for a pair of coacting implements, with a part of said body portion lying between said seating means and providing a fulcrum about which implements seated in said seating means may be moved, said body portion including resilient means associated therewith and biasing said implements to one operative position and yielding to allow movement of the implements under manual force to a second operative position, said body portion comprising a divided arcuate resilient member, and said seating means comprising a pair of sleeves on said arcuate resilient member adapted to receive and hold terminals of a coacting pair of rod-like implements, said divided arcuate resilient member being a divided annulus, and said sleeves being convergent and tapering toward corresponding ends and being fixedly secured to said annulus on opposite sides of the division in the annulus and being on axes which extend chordwise of the annulus.

4,199,181

SNOW SHOVEL

Winfred A. Mason, St. Louis, Mo., assignor to Sidewalk Savage Enterprises, Inc., Clayton, Mo.

Filed Sep. 20, 1978, Ser. No. 944,008
Int. Cl.[2] A01B *1/02*
U.S. Cl. 294—54 **10 Claims**



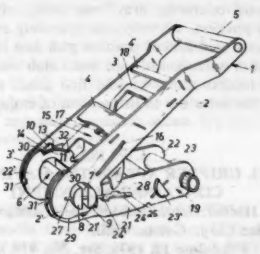
1. A snow plow or shovel comprising: a blade formed from a generally trapezoidal blank and defined by a leading edge, long and short side edges that are generally perpendicular to the leading edge, and a rear edge that is oblique with respect to the side edge, the blade having a substantially trianglar portion that is generally flat and a curved rear portion, with leading edge being located in its entirety along the triangular portion and extending cross-wise with respect to the direction that the blade is advanced over a surface to be cleared of snow, the long side edge extending away from a corner of the triangular portion and the short side edge extending along and forming the side of the triangular portion, the triangular flat portion being adapted to lie generally along and immediately over the surface to be cleared of snow as the blade is advanced, the curved rear portion extending generally rearwardly and upwardly with respect to the triangular portion with the long side edge of the blade being located substantially in its entirety along one side of the curved portion and the short side edge of the blade being located in part along the other side of the curved portion, the two side edges being curved upwardly along the sides of the curved section with the long side edge being curved more than the short side edge, the long side edge further being curved such that the corner formed by the intersection of the long side edge and the rear edge is located generally over and spaced upwardly from the triangular flat portion; a handle projecting rearwardly from the curved portion generally midway between the long and short side edges; means for securing the leading end of the handle to the back face of the curved portion; and a strut extended between the handle and the curved portion of the blade, the strut being attached to the curved portion of the blade adjacent to the rear edge.

4,199,182

DEVICE ARRANGED TO TIGHTEN AND TO LOCK SLINGS OR LOAD-FASTENING BELTS

Sigvard B. Sunesson, Angered, Sweden, assignor to Goteborgs Bandväveri AB, Angered, Sweden

Filed Oct. 13, 1978, Ser. No. 951,084
Claims priority, application Sweden, Oct. 31, 1977, 7712242
Int. Cl.[2] B66F *3/00*
U.S. Cl. 254—79 **2 Claims**



1. An improved device for tightening and locking belts, such as slings, load-fastening belts and the like, comprising

a reel drum on which said belt is wound,

a number of disc-like members on said drum so as to rotate therewith, said disc-like members provided with peripheral teeth,

a first, radially extending tooth face on each one of said teeth, and a second face on each one of said teeth, said second face being inclined relative to and extending transversely of the disc-like member radius,

a first operating arm mounted on said drum and pivotable between a first and a second end position, a first catch means on said arm, guide means in said operating arm, said first catch means arranged in said guide means, said first catch means being spring-loaded in order to be urged into engagement between said disc-like member teeth, and arranged to be displaced out of engagement with said teeth,

a second arm having one end thereof mounted on said drum, a second catch means provided on said second arm, guide

means in said second arm, said second catch means arranged in said guide means and being spring-loaded in order to engage said disc-like member teeth,

the arrangement being such that said first catch mean, upon pivotal movement of said operating arm from the first toward the second end position to wind said belt onto said reel drum, is brought into engagemeent with one said radial first tooth face, thus effecting turning of said reel drum, and such that said second catch means slides on said inclined second tooth faces of said disc-like member teeth and, upon its movement past one of said teeth, snaps down behind the radial first face of said tooth, thus preventing said toothed disc-like members from being turned in the opposite direction, said first operating arm being arranged, after having been pivoted to its opposite second end position for the purpose of effecting continued winding-on of said belt, to be first re-set to its first end position, wherein said first catch means is arranged to slide over said inclined tooth faces of said teeth, while at the same time said drum and said toothed disc-like members are retained in position by said second catch means and, in order to release said drum, said operating arm is arranged, upon the disengagement of said first catch means against the action of said spring bias, to be pivoted past its second end position past a stop member on said second arm, whereby said second catch means, upon the pivotal movement of said operating arm past said stop member, is arranged to slide along a guide face on said operating arm and, against the action of said spring bias, to be forced out of its engagement with said disc-like member teeth to a position, wherein said operating arm may be locked by the engagement of said first catch means in a groove means on said second arm, the improvement comprising

a projecting locking member on the one end of said second arm, said first operating arm arranged to be pivoted in the direction opposite to the direction from the first to the second position thereof into a locked position past its first end position, in which locked position said first catch means of said first operating arm catches behind said locking member, said locking member arranged to prevent said operating arm from being pivoted from its locked position, whereby said operating arm may be pivoted from said locked position past said locking member only after actuation of said first catch means against the spring-loaded action of said first catch means so as to move the latter out of its position of engagement.

4,199,183

INTERNAL GRIPPER APPARATUS HAVING POSITIVE CONTAINER ALIGNMENT

Michael F. Hecker, Santa Barbara, Calif., assignor to Industrial Automation Corp., Goleta, Calif.

Filed Jun. 12, 1978, Ser. No. 914,763

Int. Cl.² B66C 1/42

U.S. Cl. 294—97 **11 Claims**

1. Container gripper apparatus for gripping a container from within upon engagement along a longitudinal axis comprising:

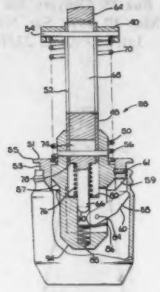
a housing means;

a plurality of gripper members, said gripper members being spaced about the periphery of said housing means adjacent the lower end thereof and extending generally radially outward therefrom, each of said gripper members being coupled to said housing means for rotation between extended and retracted positions about axes generally perpendicular to and spaced from said longitudinal axis;

means for yieldably encouraging said gripper members to the extended position;

an actuator, said actuator being slidably coupled to said housing for relative sliding motion with respect thereto in the direction of said longitudinal axis between extended and depressed positions, said actuator being disposed to engage the inward extending ends of said gripper members when moved to said depressed position, and

guide means associated with said housing means for confining the relative location of the top of a container held thereby, said gripper members being rotatable upward upon contact with the mouth of a container so as to encourage approximate coaxial alignment between said



gripper apparatus and said container, said guide means being positioned above said gripper members so as to receive the substantially coaxially aligned top of said container and to confine the relative location thereof.

4,199,184

LIFTING GEAR FOR FILLED SACKS

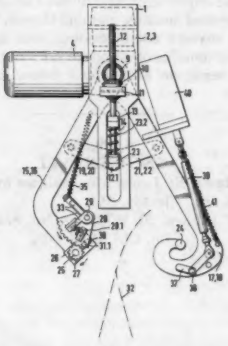
Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 24, 1978, Ser. No. 899,341

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1977, 2718586

Int. Cl.² B66C 1/10

U.S. Cl. 294—106 **10 Claims**



1. Apparatus for lifting filled sacks, comprising a pair of parallel clamping bars in which the gathered and flattened end of the sack can be inserted to envelop same, characterised in that a first clamping bar (**24**) is disposed at the free end of one of two pairs of levers (**15, 16; 17, 18**) which are pivotable in the manner of tongs and the second clamping bar (**31**) is secured to pivotable links (**26**) at the end of the other pair of levers (**15, 16**), which links, after or near completion of the closing motion of the pairs of levers (**15** to **18**), revolve the second clamping bar (**31**) about the first (**24**) and can be locked in their pivoted position, and that one clamping bar (**31**) can be slightly displaced parallel to itself towards the other clamping bar (**24**) and that drives are provided for the pivotal motions.

4,199,185

APPARATUS FOR REDUCING THE WIND RESISTANCE IMPOSED ON A PRIME MOVER-TRAILER COMBINATION

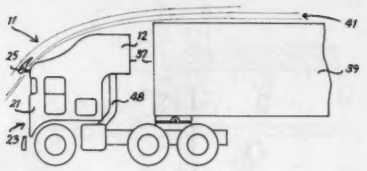
Graeme E. Woolcock, Lot 1, Coffey Rd., Jandakot, Australia

Filed Jun. 15, 1978, Ser. No. 915,800

Claims priority, application Australia, Jun. 17, 1977, PD0490

Int. Cl.[2] B62D *35/00*

U.S. Cl. 296—1 S **6 Claims**



1. Apparatus for reducing the wind resistance or drag imposed on a prime mover-trailer combination, said apparatus being adapted to mounting on top of the prime mover, said apparatus comprising an upper surface generally extending upwardly and rearwardly from a lower forward portion to an upper rearward portion, a substantially concave reflex being provided in the upper surface between said lower forward portion and said upper rearward portion, and a first vane spaced from the forward portion for directing an air current generally along said upper surface when the prime mover-trailer combination is in forward motion.

4,199,186

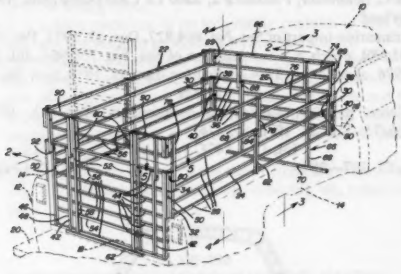
PORTABLE STOCK RACK FOR PICKUP TRUCK

Robert M. Faverino, Rte. 2, Box 85A, Ignacio, Colo. 81137

Filed Jan. 11, 1978, Ser. No. 868,508

Int. Cl.[2] B60P *3/04*

U.S. Cl. 296—13 **9 Claims**



1. A stock rack for a pickup truck load bed of the type including opposite side walls interconnected at their forward ends by means of a transverse front wall, said rack including opposite side and front sections for disposition in upstanding position extending along and projecting upwardly from the upper marginal edge portions of said side and front walls, said front section extending between and being secured to the forward ends of said opposite side sections, said side and front sections each including an extension supported therefrom for swinging about an axis paralleling the upper marginal edge of the corresponding section between a lowered inverted position disposed alongside and generally paralleling the corresponding section and a raised upright and upstanding upper position forming an upward extension of the corresponding section, said side and end section extensions being disposed along the outer and inner sides of the corresponding sections, respectively, when in the lowered inverted positions, said stock rack including a pair of opposite side partial end wall sections supported and projecting inwardly from the rear ends of said side sections toward each other and including horizontally spaced upstanding adjacent edge portions, and a gate member removably supported in position spanning and closing the space between said adjacent edge portions, said partial end wall sections extending downwardly below the lower marginal portions of said side sections for support from the floor of said load bed at the rear marginal portion thereof.

4,199,187

DEVICE FOR PREVENTING AIR-CONDITIONING WARM OR COOL BLAST FROM BLOWING THROUGH UNDER A SEAT

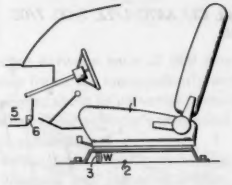
Fumiaki Kobayashi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 11, 1978, Ser. No. 895,385

Claims priority, application Japan, Dec. 1, 1977, 52-161363[U]

Int. Cl.[2] B62D *33/06, 27/04*

U.S. Cl. 296—24 R **4 Claims**



1. In a vehicle having a floor and a passenger's seat, spaced above the floor, which is adjustably slidable forwardly and rearwardly on tracks, the improvement comprising a shield for blocking the flow of cooling or heating air from locations forward of the seat beneath the seat between it and the floor to a region to the rear of the seat, said shield comprising:

a substantially rectangular flexible sheet having upper and lower edges and a length substantially equal to the width of the seat and a width substantially greater than the spacing of the seat from the floor, the lower edge of said sheet being fixedly secured to the floor and the upper edge of the sheet being fixedly secured to the bottom of the seat and being movable therewith when the seat is slidably adjusted forwardly or rearwardly.

4,199,188

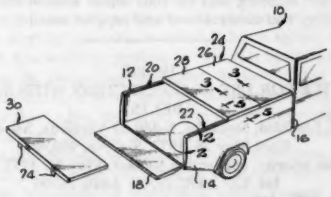
VEHICLE ACCESSORY SYSTEM

Leonard N. Albrecht, Beverly Hills, and Bert C. Taylor, Jr., Los Angeles, both of Calif., assignors to Access-O-Trac, Beverly Hills, Calif.

Continuation-in-part of Ser. No. 824,165, Aug. 12, 1977, abandoned, which is a continuation of Ser. No. 603,360, Aug. 11, 1975, abandoned. This application Jan. 3, 1978, Ser. No. 866,495

Int. Cl.[2] B60P *7/02*

U.S. Cl. 296—100 **27 Claims**



1. A cover assembly for a truck having an open bed and a

pair of sidewalls on opposite sides of the bed, comprising in combination:

a pair of rails mounted respectively on said opposite sidewalls with both extending longitudinally thereof;

a plurality of separate cover sections slidably and removably mounted on the rails in adjoining relationship while extending across the bed;

means mounted on the separate cover sections for forming an elastic seal compressible between adjoining separate cover sections; and

means for locking the separate cover sections in adjoining relationship on the rails with the elastic seals between adjoining cover sections in a compressed condition to form water resistant junctions between said sections.

4,199,189

ASSEMBLY OF PREFABRICATED PARTS FOR MANUFACTURE OF BENCHES, TABLES AND THE LIKE

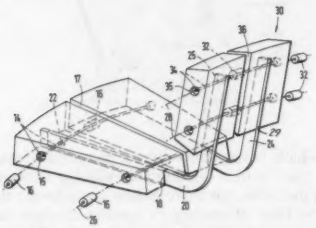
Herwig Neumann, Herrenberger Str. 39, 7031 Hildrizhausen, Fed. Rep. of Germany

Filed Apr. 21, 1978, Ser. No. 898,668

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717645

Int. Cl.[2] **A47C** *1/12, 7/00, 7/02*

U.S. Cl. 297—445 **5 Claims**



1. In the construction of benches and the like outdoor furniture, a plurality of seat elements each having a longitudinal recess formed in the bottom thereof and a pair of transverse openings extending therethrough, each of said openings having an enlarged counterbore at the ends thereof in lateral sides of said seat elements, a plurality of back elements equal in number to said seat elements, each of said back elements having a longitudinal recess formed in the rear thereof and a pair of transverse openings extending therethrough, each of said openings having an enlarged counterbore at the ends thereof in lateral sides of said back elements, a plurality of angled support members, each of said support members having one portion lying in said recess in one of said seat elements and another portion lying in said recess in one of said back elements, said openings and said counterbores in said elements being substantially aligned with adjacent openings in adjacent elements, a spacer element having an axial bore therein positioned between adjacent seat elements and between adjacent back elements and lying in said counterbores in said elements, flexible tie rods extending through the openings in adjacent elements, through said spacer elements and through said support member, and means for securing said tie rods under tension for securely connecting said elements and said support members.

4,199,190

DEVICE FOR USE IN CONNECTION WITH SAFETY BELTS

Stig M. Lindblad, Stockabo, S-440 20 Värgärda, Sweden

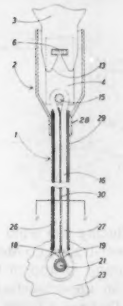
Filed May 26, 1978, Ser. No. 909,982

Claims priority, application Sweden, May 26, 1977, 7706162

Int. Cl.[2] **A47C** *31/00;* **A44B** *19/00*

U.S. Cl. 297—468 **9 Claims**

1. A device for detachably fastening a safety belt for a vehicle at least to one of its fastening points comprising a semi-rigid anchoring part in the form of a wire loop, at least one covering enclosing said anchoring part, both portions of said loop extending alongside each other inside of said covering and having terminal ends, a a coupling part supported at one end of said anchoring part remote from said terminal ends for detachably fastening the safety belt, said one end of said anchoring part extending into said coupling part, a stress-absorbing portion on said coupling part extending into said loop, and a fastening means at the other end of said anchoring part comprising a fastening fitting provided with an opening and a fastening element extending through said opening for fastening to a fixed part of the vehicle, said terminal ends of said loop being fastened to said fastening means and extending around said fastening element.



4,199,191

HEADREST FOR SEAT OF VEHICLE

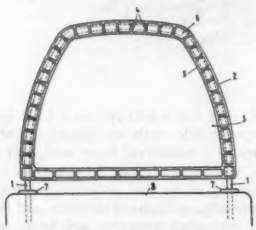
Jean C. Schneider, Plaisance 2, 2300 La Chaux-de-Fonds, Switzerland

Continuation-in-part of Ser. No. 864,827, Dec. 27, 1977, Pat. No. 4,141,589, which is a continuation of Ser. No. 708,864, Jul. 26, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,929

Claims priority, application Switzerland, Aug. 12, 1975, 10566/75; Jan. 24, 1976, 872/76

Int. Cl.[2] **A47C** *1/10, 7/38*

U.S. Cl. 297—397 **17 Claims**

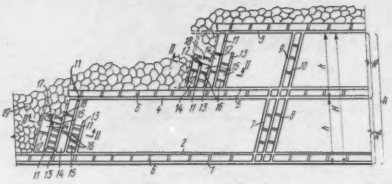


1. In a vehicle seat headrest unit of the type having a frame with a pair of spaced leg portions adapted for attachment to the seat and energy absorbing means spanning the frame for absorbing energy, the improvement comprising reinforcement means surrounding the frame and connecting said energy absorbing means to the frame, said reinforcement means having a plurality of segments, and said segments cooperating with said energy absorbing means in the absorbtion of a shock to said headrest unit.

4,199,192
METHOD OF MINING BEDDED MINERAL DEPOSITS WITH HYDRAULIC EXTRACTION

Boris P. Odinokov, ulitsa Chernomorskaya 2, kv. 21; Anatoly Y. Semenikhin, ulitsa Transportnaya 97, kv. 55; Gavriil A. Pakhtusov, prospekt Pionersky 46, kv. 225; Jury G. Pakhtusov, ulitsa Transportnaya 61, kv. 111, and Anatoly E. Sankov, ulitsa Ushinskogo 8, kv. 14, all of Novokuznetsk, U.S.S.R.

Filed Feb. 27, 1978, Ser. No. 881,385
Int. Cl.² E21C *45/00*
U.S. Cl. 299—17 **7 Claims**



1. A method of mining bedded mineral deposits with hydraulic excavation, including

dividing a bed to be mined into long pillars extending along the strike by means of dividing accumulating, parallel and ventilating entires as well as rise workings for slurry flowing-down material lifting and gang ways on the rise;

running extraction workings in each said pillar and interconnecting said pillars with air holes;

providing boundary workings, parallel to said extraction workings and connecting them therewith with cut breakthroughs, with the distance between adjacent cut breakthroughs being set within the width of a single stop washing;

expanding said cut breakthroughs down to the seam floor;

providing workings in the long pillar being mined along the strike two-bench mining bends (short pillars) defining short working faces;

setting a hydromonitor in an invariable position in said extraction working to produce a hydromonitor jet;

hydraulically extracting the mineral in two directions from each stope washing in both adjacent benches, in the direction of the gravity by flowing of a slurry of water and the mined mineral along the working commencing with the expanding of the cut breakthrough in the lower bench down to the seam floor; and

removing the main stream of the slurry from the stope washings via said boundary workings omitting the extraction ones.

4,199,193
UNDERGROUND MINING MACHINE HAVING TEMPORARY ROOF SUPPORT MEANS AND ROOF BOLTING MEANS ASSOCIATED THEREWITH

Earl M. Damron, Huntington, and Jack I. Lipps, Williamson, both of W. Va., assignors to Acme Machinery Company, Huntington, W. Va.

Filed Jul. 28, 1978, Ser. No. 928,853
Int. Cl.² E21C *29/02*
U.S. Cl. 299—31 **16 Claims**

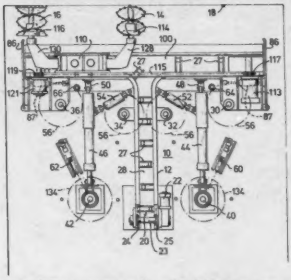
1. A mining machine for forming an entry in an underground mine comprising:

a main frame having an elongated front portion and a rearwardly extending leg portion connected to said front portion intermediate of its ends;

a plurality of forward roof support jacks attached to said front portion of said main frame and each being operable between a retracted position and an extended position to provide temporary mine roof support;

a pair of sumping cylinders disposed on opposite sides of said leg portion of said main frame and connected at their forward ends to said front portion of said main frame by universal connections, said cylinders being independently operable between extended positions and retracted positions;

mine floor and roof engaging means pivotally connected to the rear ends of said sumping cylinders for detachably anchoring the rear ends of said sumping cylinders and for providing temporary mine roof support;



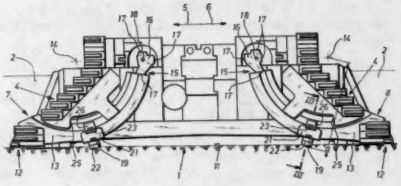
means connected between each of said sumping cylinders and said main frame for independently moving each said sumping cylinder about its universal connection thereto to position said sumping cylinder's associated mine floor and roof engaging means; and

roof bolting means supported for movement about each of said mine floor and roof engaging means.

4,199,194
CONTROL MEANS FOR A COAL PLOUGH

Bernd Steinkuhl, Lunen, and Oswald Breuer, Dortmund-Husen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Feb. 5, 1979, Ser. No. 9,716
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2804976
Int. Cl.² E21C *27/44*
U.S. Cl. 299—34 **11 Claims**



1. In a coal plough which is movable to and fro in a mine working alongside a coal face, the plough having floor-level cutters mounted on a carrier which is pivotable in a vertical plane about a horizontal axis perpendicular to the coal face between a working position, in which it bears against a first stop, and a non-working position, in which it bears against a second stop, the cutters bearing against the floor of the working when the carrier is in the working position and being lifted clear of the floor when the carrier is in the non-working position, the first stop defining the level of cut of the cutters and the second stop limiting the upward pivotal movement of the carrier, and the first and second stops being provided on the plough, the improvement comprising cutter control means constituted by a peg which extends from the carrier towards the floor, the peg engaging the floor to move the carrier into

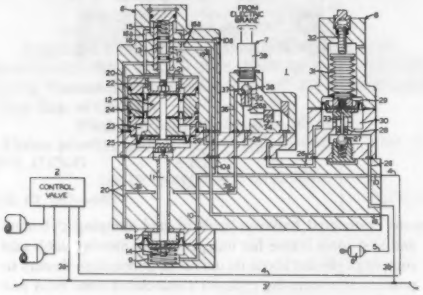
the working position when the plough moves in one direction and to move the carrier into the non-working position when the plough moves in the opposite direction.

4,199,195

DYNAMIC/FRICTION BRAKE BLENDING CONTROL SYSTEM

John T. Pekarcik, Murrysville, and Richard J. Mazur, Pittsburgh, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Oct. 16, 1978, Ser. No. 951,934
Int. Cl.[2] B60T *13/74*
U.S. Cl. 303—3 **6 Claims**



1. A dynamic/friction brake blending control system for a railway vehicle to which a brake command signal is connected, said brake blending control system comprising:

(a) fluid pressure operated brake means for providing friction braking effort;

(b) a control valve device operative responsive to said brake command signal for supplying fluid brake pressure to said brake means;

(c) transducer means for providing a fluid pressure feedback signal representative of the degree of dynamic brake effort on said vehicle; and

(d) a self-lapping relay valve device via which said fluid brake pressure is connected to said brake means comprising:

(i) a supply passage to which said fluid brake pressure is connected from said control valve device;

(ii) a delivery passage connected to said brake means; and

(iii) a piston valve assembly for controlling fluid pressure communication between said supply and delivery passages comprising:

(1) a control piston subject to said fluid brake pressure in said supply passage; and

(2) a dynamic brake feedback piston subject to said feedback signal for exerting a force on said piston valve assembly in opposition to the force exerted thereon by said control piston for modulating said fluid brake pressure delivered to said brake means in accordance with the effectiveness of said dynamic brake.

4,199,196

BRAKE CONTROL VALVE

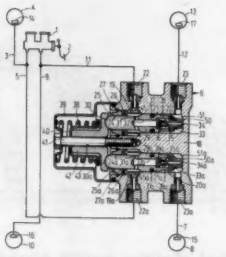
Yambe Teluo, Yokohama, Japan, assignor to The Nippon Air Brake Co., Ltd., Kanagawa, Japan

Filed Feb. 9, 1978, Ser. No. 876,358
Claims priority, application Japan, Feb. 18, 1977, 52-17372
Int. Cl.[2] B60T *13/04*
U.S. Cl. 303—6 C **7 Claims**

1. A dual system brake control valve comprising:

(a) a main body having a pair of cylinder bores, a pair of inlets communicating with said cylinder bores, and a pair of outlets communicating with said cylinder bores, said inlets being connected to a master cylinder for a dual system;

(b) a pair of stepped pistons slidably fitted into said cylinder bores, each piston having bores communicating with a respective inlet and outlet, said stepped pistons each receiving a first pushing force in one direction due to the fluid pressure at said inlet, and a second pushing force in the opposite direction due to the fluid pressure at said outlet;



(c) a spring guide means contacting said stepped pistons, a support rod fixed to said main body, said spring guide means being slidably supported by said rod;

(d) a prestressed spring engaging said guide means for pushing said stepped pistons in said one direction; and

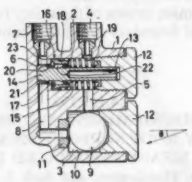
(e) a valve member arranged in the bore of each stepped piston, each valve member being in the opened or closed condition depending on the difference between said second pushing force, and the sum of said first pushing force and the force of said prestressed spring.

4,199,197

DECELERATION DETECTING TYPE PROPORTIONING VALVE FOR VEHICLE

Toshihumi Maehara, Chichibu, Japan, assignor to Akebono Brake Industry Co. Ltd., Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,565
Claims priority, application Japan, Jul. 19, 1977, 52-96104[U]
Int. Cl.[2] B60T *8/14*
U.S. Cl. 303—24 F **9 Claims**



1. A deceleration detecting type proportioning valve for a vehicle comprising:

a cylinder body;

a differential area piston slidable within said cylinder body;

input and output chambers provided within said cylinder body;

a first spring which presses said piston toward said exit chamber;

a valve seat disposed inside said cylinder body;

a valve member which is caused to engage said valve seat by a pushing force of a second spring;

a first flow passage allowing said input and output chambers to communicate with each other;

a valve head which shuts off the communication between

said input and output chambers through said first flow passage;

a second flow passage which allows said input and output chambers to communicate with each other when said valve member is caused to move away from said valve seat by a predetermined amount of the movement of said piston toward said input chamber to a preset extent or further;

a third flow passage allowing said input chamber to communicate with said output chamber; and

a deceleration detecting valve which is disposed in said third flow passage and closes when deceleration of the vehicle reaches a preset value.

4,199,198

VEHICLE BRAKING CONTROL APPARATUS

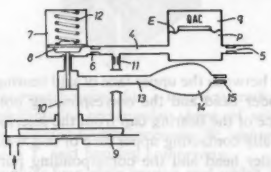
David J. Wickham, London, England, assignor to Westinghouse Brake and Signal Co. Ltd., London, England

Filed Apr. 3, 1978, Ser. No. 892,970

Claims priority, application United Kingdom, Apr. 6, 1977, 14471/77

Int. Cl.² B60T *15/52*

U.S. Cl. 303—36 **6 Claims**



1. Apparatus for improved quick service operation of a vehicle braking system employing direct release triple valves and having a quick action chamber and sensitivity valve means operable for normal service braking operation to bleed fluid pressure from said quick action chamber to follow brake pipe pressure reductions, the apparatus having a reference pressure input path connected to said quick action chamber and a brake pipe pressure signal input path, a pressure responsive member responsive to a predetermined difference between a control pressure and the pressure at the reference pressure input port to operate a further valve to initiate a reduction below brake pipe pressure of the fluid pressure in the brake pipe pressure signal input path to cause said sensitivity valve means to effect a reduction of the reference pressure and reclosure of said further valve, the operation being repetitive during a reduction of the brake pipe pressure at a sufficient rate.

4,199,199

CARTRIDGE-TYPE PIVOTAL PIN AND BUSHING JOINT

Gerald L. Granda, 822 S. Feldkamp Ave., Springfield, Ill. 62704

Filed Sep. 13, 1978, Ser. No. 942,053

Int. Cl.² B62D *55/20;* **F16G** *13/08*

U.S. Cl. 305—11 **12 Claims**

1. A cartridge-type pivotal pin and bushing joint comprising in combination:

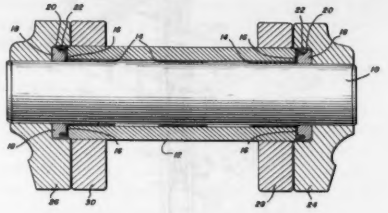
a. a cylindrical pin;

b. a large, hollow metal cylinder concentrically disposed on said pin intermediate the extremities thereof;

c. a plurality of spaced, dry, self-lubricated cylindrical bushings between said pin and said cylinder at least adjacent the extremities of said cylinder, said bushings being radially compressively preloaded sufficiently to reduce compression set under functional loading of the joint but still permitting at least limited relative rotational movement of said pin with respect to said cylinder under said functional loading;

d. dry, self-lubricated annular thrust bearings substantially concentrically mounted on said pin adjacent the extremities of said cylinder;

e. thrust-controlling annular retainers immovably press-fitted on said pin axially exterior to and abutting said thrust bearings so as to compressively preload said thrust bearings against at least a radially-inner portion of the ends of said cylinder, said retainers having seal-receiving annular



grooves radially outwardly of the outer radial extremity of said thrust bearings, the open end of each of said grooves being disposed towards the ends of said cylinder; and

f. resilient sealing means disposed in said grooves and sealingly engaging end portions of said cylinder throughout the normal range of relative axial and oscillatory movement thereof under said functional loading.

4,199,200

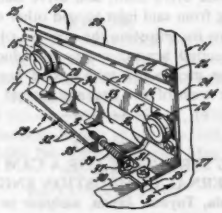
ROLLER BRACKET ASSEMBLY FOR DRAWERS

Richard D. Livingston, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Aug. 29, 1978, Ser. No. 937,725

Int. Cl.² A47B *88/10;* **F16C** *21/00, 29/04*

U.S. Cl. 308—3.8 **6 Claims**



1. A roller bracket assembly adapted to support a drawer for in and out sliding in an opening in a cabinet, said bracket assembly comprising a vertical wing, a horizontal wing integral with and projecting laterally from the lower edge of said vertical wing, a first roller journaled on one of said wings adjacent one end thereof, a second roller journaled on said one wing adjacent the other end thereof, one of said wings having a transverse slot disposed between said first and second rollers, and means on said one wing connecting said one wing on opposite sides of said slot, said means being selectively operable to increase or decrease the width of said slot and thereby bending said wings adjacent said slot and changing the position of said second roller relative to said first roller.

4,199,201

BEARING ASSEMBLY WITH ADJUSTABLE LOCK NUT

Kurt H. Trzeciak, Fountain Valley, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 18, 1978, Ser. No. 934,956
Int. Cl.[2] F16C *19/00*
U.S. Cl. 308—8.2 21 Claims

1. A bearing assembly for use with an inhole fluid motor having a stator and a rotor, said bearing assembly comprising an elongated, outer housing connectable at one end to said stator; a drive shaft in said housing connectable at one end to said rotor and projecting at its other end from the other end of said housing; first thrust bearing means on said drive shaft and said housing for transmitting thrust from said housing to said drive shaft in one direction; second thrust bearing means on said drive shaft and said housing adjacent said one end of said drive shaft for transmitting thrust from said housing to said drive shaft in the other direction; and stop means on said drive shaft spaced from said second bearing means to enable limited longitudinal movement of said housing relative to said drive shaft to load and unload said bearing means when thrust is transmitted in opposite directions between said housing and said drive shaft; said stop means including a connector cap on said drive shaft connectable with said rotor and having a fluid inlet from said stator to said drive shaft; said drive shaft having a fluid passage leading from said inlet to said other end of said drive shaft; and means for adjusting the position of said stop means towards said second bearing means to reduce the space between said stop means and said second bearing means and compensate for wear of said first and second bearing means.

4,199,202

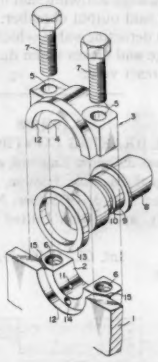
BEARING STRUCTURE FOR A CAM SHAFT IN INTERNAL COMBUSTION ENGINES

Yorishige Maeda, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 740,881, Nov. 11, 1976, abandoned.
This application Aug. 7, 1978, Ser. No. 931,446
Claims priority, application Japan, Aug. 20, 1976, 51-10047
Int. Cl.[2] F16C *3/14;* F01M *1/04*
U.S. Cl. 308—23 6 Claims

1. In a cam shaft bearing structure comprising a cylinder head having a vertical outer wall portion and a bearing portion on said wall portion, said wall and bearing portions having a continuous upper face, said bearing portion having a first semi-circular journal-receiving cavity; a bearing cap having a lower face to join said upper face of said bearing portion and a part of said upper face of said wall portion and a second semi-circular journal-receiving cavity which forms a circular bearing cavity together with said first semi-circular journal-receiving cavity when said bearing cap is mounted on said cylinder head, the improvement comprising

means to facilitate return lubricating oil flow to the inside of said vertical outer wall portion by a direct route, to avoid oil flow between said upper and lower faces, said means comprising a groove in at least one of said joining faces which traverses that face so as to completely separate the



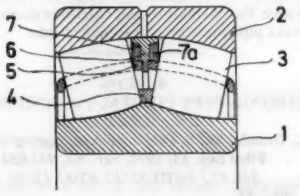
interface between the upper face of said bearing portion of the cylinder head and the corresponding portion of the lower face of the bearing cap from the interface between the mutually contacting upper face of said wall portion of the cylinder head and the corresponding portion of the lower face of the bearing cap, said groove opening at one end thereof to the inside of said vertical outer wall portion.

4,199,203

OUTER RACE RING CENTERED RETAINER FOR ROLLING BEARINGS

Torgny Pearson, Västra Frölunda, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Oct. 4, 1978, Ser. No. 948,495
Claims priority, application Sweden, Oct. 18, 1977, 7711705
Int. Cl.[2] F16C *33/66, 19/28*
U.S. Cl. 308—213 3 Claims



1. A centering ring for a rolling bearing assembly comprising an outer ring, an inner ring and at least two rows of rolling elements in the annular space between the said inner and outer rings, a retainer having a plurality of circumferentially spaced pockets for the rolling elements, said centering ring being made of sheet metal and of T-shaped cross section, the outer surface of the bar of the T conforming to the shape of the outer raceway and the vertical leg of the T connected to the retainer, the inner surfaces of the bar of the T on either side of the vertical leg being conical and diverging outwardly from the vertical leg to direct lubricant to the area between the rolling elements and outer raceway.

4,199,204

HOUSING FOR A TWO-WAY RADIO OR THE LIKE

Roy F. Hodsdon, and Henry A. Schaefer, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Dec. 18, 1978, Ser. No. 970,479
Int. Cl.[2] A47B *81/06*
U.S. Cl. 312—7 R 4 Claims

1. An improved housing for a two-way radio or the like having a substantially rectangular shape of selected height dimension H, selected width dimension W, and selected thickness dimension T, said housing comprising:

a. a rectangular base plate having said width W and thickness T;

b. a rectangular top plate having said width W and thickness T;

c. a rectangular left side plate having said height H and thickness T, said left side having a tongue extending along at least a portion of each edge forming said height dimension H;

d. a rectangular right side plate having said height H and thickness T, said right side plate having a tongue along at least a portion of each edge forming said height dimension H;

e. means mechanically fastening said base plate to the lower edges of said left and right side plates so that said thickness dimensions T of said base plate edges join said lower thickness dimensions T of said left and right side plates;

f. means mechanically fastening said top plate to the upper edges of said left and right sides so that said thickness dimensions T of said top plate edges join said upper thickness dimensions T of said left and right sides;

g. said fastened side plates, base plate, and top plate forming a strong rectangular structure;

h. a rectangular front cover plate having said width dimension W and height dimension H, said front cover plate having a longitudinal groove extending along at least a portion of each edge forming said height dimension H;

i. a rectangular rear cover plate having said width dimension W and height dimension H, said rear cover plate having a longitudinal groove along at least a portion of each edge forming said height dimension H;

j. means positioning said front cover plate against the front edges of said fastened side plates, base plate, and top plate with the tongues of said left and right side plates positioned in respective grooves of said front cover plate;

k. means positioning said rear cover plate against the rear edges of said fastened side plates, base plate, and top plate with the tongues of said left and right side plates positioned in respective grooves of said rear cover plate;

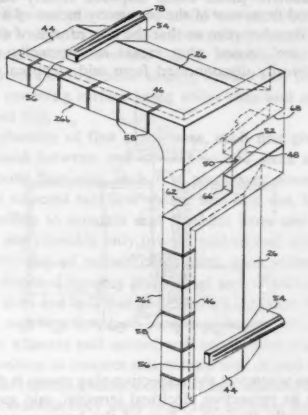
l. and means mechanically fastening said front cover plate to said rear cover plate to form a generally enclosed housing.

4,199,205

REFRIGERATOR CABINET CONSTRUCTION

Ralph C. Cooke, and James D. Wilkerson, Jr., both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Sep. 18, 1978, Ser. No. 943,608
Int. Cl.[2] F25D *11/00;* A47B *81/00*
U.S. Cl. 312—214 9 Claims



1. In a refrigeration appliance having an outer shell and an inner liner cooperatively defining an insulation space therebetween having a front opening,

a flange portion substantially parallel to said outer shell defining a holding area therebetween;

a strip of rigid foam dimensioned for closing said front opening including a wall section having a first portion formed on one edge of said wall portion being dimensioned to be received in said holding area, a second portion formed on the other edge of said wall portion engaging said inner liner;

rib means projecting from said wall portion at spaced intervals extending from said wall portion to said outer shell to extend said insulation space between said wall and said outer shell in said front opening area.

4,199,206

WALL PANEL WITH PREWIRED POWER SYSTEM

Richard G. Haworth, Holland; Charles J. Saylor, Zeeland, and Harold R. Wilson, Holland, all of Mich., assignors to Haworth Mfg., Inc., Holland, Mich.

Continuation of Ser. No. 737,420, Nov. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,506, Sep. 22, 1975, Pat. No. 4,060,294. This application May 26, 1978, Ser. No. 909,782
Int. Cl.[2] H01R *39/02*
U.S. Cl. 339—4 7 Claims

1. A connector for releasable connection to first and second electrical terminals for electrically connecting said terminals together, said connector comprising:

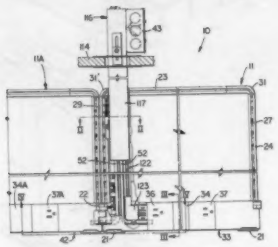
housing means including first and second housing parts constructed of an electrically insulated material and disposed for association with said first and second terminals, respectively;

first and second electrical plug means respectively associated with said first and second housing parts, each of said plug means including at least two electrically conductive prongs rigidly and stationarily fixed with respect to its respective housing part and projecting outwardly therefrom;

electrical conductor means disposed within said housing

means and extending between said first and second housing parts, the opposite ends of said electrical conductor means being adapted for electrical connection with said first and second plug means;

said electrical conductor means includes first and second conductors extending between said housing parts and each terminating in a pair of conductive plates which are rigidly associated with the respective housing parts, the conductive plates being disposed closely adjacent but spaced from one of the prongs by means of a separation gap therebetween so that the two prongs of each of said first and second plug means are normally maintained electrically disconnected from said electrical conductor



means whenever the respective plug means is disengaged from its respective electrical terminal, said gap opening outwardly through a face of the housing part directly adjacent the prong so as to define a slot into which a connective element can be inserted so as to electrically bridge the gap between the prong and the respective plate when the plug means is engaged with its respective electrical terminal; and

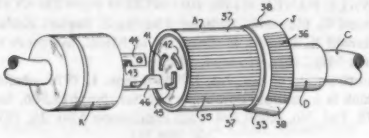
said first and second housing parts being joined together by intermediate structure which permits said first and second housing parts to be angularly displaced relative to one another at least within a plane which extends substantially parallel with the projecting direction of said prongs.

4,199,207

CONVERTER PLUG WITH IMPROVED SELF-LOCKING TERMINALS TO STANDARD PLUG

Hop Lee, 2455-24th Ave., San Francisco, Calif. 94116

Filed Oct. 5, 1978, Ser. No. 948,952
Int. Cl.[2] H01R *3/06*
U.S. Cl. 339—14 P **1 Claim**



1. A converter electric plug comprising:

(a) a main cylindrical body closed at one end an exteriorily threaded at the other end, the hollow interior of said body being divided into three compartments by substantially radially extending partitions;

(b) two electrodes positioned in two of said compartments, the closed end of said main body having arcuate slots therein to permit the entrance of electrodes of a standard plug to make electrical connection with said electrodes;

(c) a "ground" terminal positioned in the third compartment, the closed end of said body having an L-shaped slot therein to permit the entrance of a "ground" terminal of the standard plug to make electrical connection with said "ground" terminal in said compartment; and

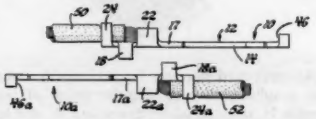
(d) the inner surface of the closed end of said body having an arcuate rib in each compartment extending inwardly and cooperating with an inwardly extending longitudinal rib in each compartment for contacting the sides of the two electrodes and "ground" terminal therein when the electrodes and terminals contact the closed end inner surface for holding these in contact with their adjacent radially extending partiion to prevent any angular shifting of the two electrodes and "ground" terminal in the compartments when the standard plug has its prongs inserted into the compartments and is rotated with respect to the main body.

4,199,208

HERMAPHRODITIC SPLICE TERMINAL

Harold G. Hawkins, Bristolville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1978, Ser. No. 971,899
Int. Cl.[2] H01R *13/28*
U.S. Cl. 339—47 R **3 Claims**



1. A hermaphroditic splice terminal adapted for coupling to a terminal of identical construction, comprising:

a forward resilient contact portion having a pair of laterally squeezable tines projecting from a base,

an intermediate assembly neck of reduced width connected to the base,

a pair of flanged clasping ears which are located rearwardly of the assembly neck and which project laterally of the forward contact portion and the assembly neck, said flanged clasping ears defining a flange spacing for receiving the assembly neck of an identical terminal to initiate coupling thereto and a slot dimensioned to squeeze the tines of the identical terminal toward each other when coupled thereto, and

a pair of crimp wings which are located between the assembly neck and the pair of flanged clasping ears and which project in a lateral direction opposite that of the flanged clasping ears to avoid interference when the terminal is coupled to the identical terminal.

4,199,209

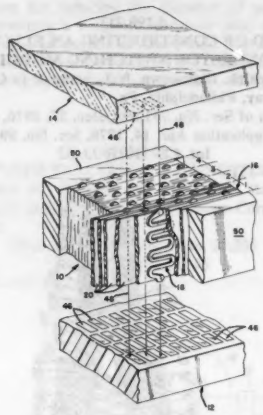
ELECTRICAL INTERCONNECTING DEVICE

Gabriel B. Cherian, York; William S. Scheingold, and Richard H. Zimmerman, both of Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 18, 1978, Ser. No. 935,042
Int. Cl.[2] H01R *13/48*
U.S. Cl. 339—59 M **4 Claims**

1. An interconnecting device for electrically interconnecting printed circuit boards or the like, comprising, an elongated connecting element of conductive material embedded in an elastomeric material, said connecting element having a spring

section comprising two S-shaped portions, each connected to and extending from either side of a bight, with contacts at the



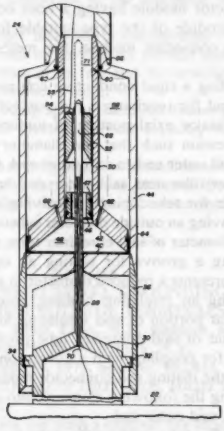
free ends thereof, said contacts being exposed at two opposing surfaces of the elastomeric material.

4,199,210

AUTOMATIC COUPLING AND DECOUPLING APPARATUS

Donald E. Trott, 2302 E. Loma Vista, Victoria, Tex. 77901

Division of Ser. No. 836,758, Sep. 26, 1977, Pat. No. 4,113,016.
This application Mar. 17, 1978, Ser. No. 887,713
Int. Cl.[2] E21B *23/00;* H01R *13/54*
U.S. Cl. 339—96 **7 Claims**



1. Apparatus for automatically coupling and decoupling a first member and a second member, comprising:

(a) a tubular member joined to said first member and having,

(i) a plurality of contiguous first slots disposed within and rimming the interior surface of said tubular member, each of said first slots closed at one end and open at the opposite end and having a first wall essentially parallel to the axis of said tubular member and a second wall at an acute angle to said first wall,

(ii) a plurality of second slots, each of said second slots disposed longitudinally within the interior surface of said tubular member, closed at one end and open at the opposite end, said second slots disposed longitudinally opposite alternate ones of said first slots with the open ends of said second slots facing the open ends of said first slots, said second slots narrower than said first slots, and said second slots essentially centered opposite the longest longitudinal dimension of said first slots,

(iii) a plurality of camming surfaces, each camming surface disposed adjacent one of said second slots opposite said first slots, having a face essentially perpendicular to the interior surface of said tubular member, and extending from a central point sloping toward said first slots, each camming surface being wider than said opposing second slot,

(iv) a plurality of first pivot arms, each first pivot arm disposed between one of said second slots and said opposing first slot, each first pivot arm pivoted at a point adjacent said first wall of said first slot, biased in a position to separate said first slot from said second slot, and rotatable only toward said second slot,

(v) a plurality of second pivot arms, each second pivot arm disposed between said second wall of said alternate first slots and said camming surface opposite the adjacent said first slot, each second pivot arm pivoted at a point adjacent said second wall of said first slot, biased in position to connect said second wall of said first slot to said camming surface opposite said adjacent first slot, and rotatable only away from said adjacent first slot,

(b) a cylindrical turret joined to said second member and having opposingly disposed studs, said turret dimensioned to pass into the interior of said tubular member, said studs dimensioned to engage said first slots, said second slots, and said camming surfaces.

5. Apparatus for making an electrical connection, comprising:

(a) a first tubular member having,

(i) a conical receptor having a central passage and disposed within said first tubular member at a first end,

(ii) a second tubular member disposed coaxially within said first tubular member, joined at a first end to said conical receptor, and the interior of said second tubular member in communication with the central passage of said conical receptor,

(iii) a first diaphragm sealing the first end of said first tubular member,

(iv) a second diaphragm sealing the first end of said second tubular member,

(v) electrically nonconductive fluid disposed within an annular chamber formed by said first tubular member and said second tubular member,

(vi) electrically nonconducting fluid disposed within a conical chamber formed by said first diaphragm, said second diaphragm and said conical receptor,

(vii) electrically nonconducting fluid disposed in a first chamber within said second tubular member and formed by said second tubular member, said second diaphragm and a second end of said second tubular member,

(viii) means for fluid communication between said annular chamber and said conical chamber,

(ix) means for fluid communication between said annular chamber and said first chamber,

(x) a first electrical contact disposed within said second tubular member,

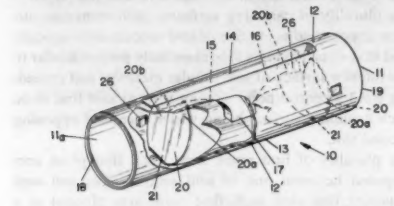
(xi) a tubular electrical insulator disposed within said second tubular member,

(b) a cylindrical member dimensioned to fit within said tubular electrical insulator and having a second electrical contact joined to the exterior surface thereof.

4,199,211
WIRE CONNECTOR

Kent A. Kidder, 6505 Salem, Apt. 206, Lubbock, Tex. 79414

Filed Dec. 18, 1978, Ser. No. 970,111
Int. Cl.[2] H01R 9/06
U.S. Cl. 339—98 24 Claims

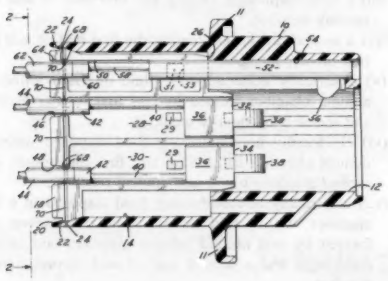


1. A wire connector comprising a tubular member having at least one open end for the insertion of a wire, a wire gripping member secured in said tubular member and inclined inwardly and away from said one open end, said wire gripping member having one end resiliently secured to said tubular member and a free end opposite said second end, a slot formed in said gripping member and extending from said free end toward said secured end, said slot being wide at said free end and narrowing toward said secured end, cam means projecting inwardly from said tubular member and spaced longitudinally inwardly of said gripping member from said one open end for forcing a wire which is inserted into said connector through said one open end and over said inclined gripping member down into said slot where an outward pull upon said wire causes the gripping member to be forced nearly upright in said tubular member and causes the wire to be forced downwardly into said slot.

4,199,212
SELF SEALING LAMP SOCKET

Joseph W. Baldyga, Mt. Clemens, Mich., assignor to C. J. Edwards Company, Detroit, Mich.

Filed Aug. 23, 1978, Ser. No. 936,141
Int. Cl.[2] H01R 13/58
U.S. Cl. 339—107 10 Claims

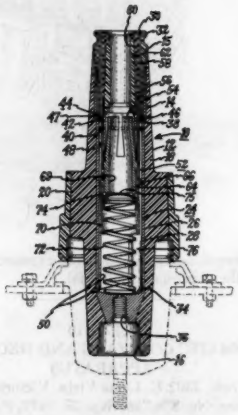


1. A sealed electric lamp socket comprising a non-conductive hollow shell housing having a lamp socket end and a tower end; a plug in said tower end having electric wire passage means extending therethrough; said plug formed from a plurality of segments having adjacent interfaces including said passage means therebetween; and sealing means adapted for engagement between the outer perimeter of said plug segments and inner perimeter of said tower, sealing means between said segments extending across their interfaces to the inner perimeter of said tower, and sealing means between the interfaces of said segments and interposed wire, all of said sealing means being rendered effective by assembly insertion of said plug segments into said tower end.

4,199,213
METHOD OF CONSTRUCTING AN ELECTRICAL CONNECTOR SWITCHING MODULE

Henry N. Tachick, Blairstown, N.J., assignor to General Electric Company, Philadelphia, Pa.

Continuation of Ser. No. 751,693, Dec. 17, 1976, abandoned.
This application Apr. 14, 1978, Ser. No. 896,263
Int. Cl.[2] H01R 13/52
U.S. Cl. 339—111 4 Claims



1. A method of constructing an electrical power cable separable connector module having a bore contact member, the connector module of the type suitable for coupling with a mating rod connector module, the method comprising the steps of:

(a) providing a rigid conductive container tube having an outer end for receiving a rod contact member, an inner end, a major axial portion of uniform diameter, and a configuration such that the diameter does not increase from said outer end to said inner end, that portion of said container tube near said outer end having an expanded diameter for telescopingly receiving an insulating nosepiece having an outside diameter substantially equal to the inside diameter of said container tube, said container tube including a groove for seating an open retaining ring which presents a reduced diameter in said container tube;

(b) molding an insulating housing around said container tube, that portion of said insulating housing around said outer end of said container tube providing an interface surface for coupling with a corresponding interface surface of the mating rod connector module; then

(c) inserting the following elements into said container tube through said outer end:

(i) a snuffer tube, said snuffer tube having a central bore for receiving said rod contact member and having inside said bore a layer of ablative material;

(ii) a bore contact member adjacent said inner end of said container tube, said contact member comprising a gas port;

(iii) a piston fixed to said bore contact member and adapted for driving said contact member along the axis of said container tube toward the outer end of said container tube in response to gas generated by arcing in said bore; and

(iv) resiliently sliding contact means fixed to said piston and pressing outwardly against the inside wall of said

container tube to establish continuous electrical contact with said wall while said piston is in motion; and

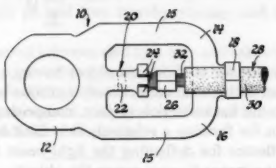
(d) inserting through said outer end of said container tube means for reducing the diameter of said container tube, said means for reducing the diameter of said container tube presenting a reduced container tube diameter for preventing axial motion of said piston beyond the placement of said means for reducing the diameter, said means for reducing the diameter comprising said open retaining ring.

4,199,214

FUSED ELECTRICAL CONNECTOR

Warren Pearce, Jr., Warren, and Charles W. Ramsey, Niles, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1979, Ser. No. 28,255
Int. Cl.[2] H01R *13/68*
U.S. Cl. 339—147 P **2 Claims**



1. A fused electrical connector for attachment to an end of an electric cable having a conductor core and an insulation jacket, comprising:

a one-piece sheet metal member having a contact portion at one end shaped for connection to a terminal,

a frame portion attached to the contact portion and

an attachment portion at an opposite end for attaching the fused electrical connector to the insulation jacket of an electric cable,

said member further including a cantilevered fuse tongue integrally attached to the contact portion and having an attachment portion at its free end for attaching the fuse tongue to the conductor core,

said fuse tongue being spaced from the frame portion and determining the electric current capacity of the fused connector, and

said frame portion maintaining mechanical attachment of the fused connector to the insulation jacket of the cable upon failure of the fuse tongue due to an excessive electric current.

4,199,215

TUBE SOCKET WITH NOVEL GROUNDING MEANS FOR HIGH VOLTAGE TERMINALS

Robert B. Pittman, River Edge, N.J., assignor to Industrial Electronic Hardware Corp, New York, N.Y.

Filed Sep. 14, 1978, Ser. No. 942,414
Int. Cl.[2] H01R *33/76*; H01T *3/00*; H02H *9/06*
U.S. Cl. 339—192 T **47 Claims**

1. A tube socket for use with a cathode ray tube of the type having a high voltage pin and a plurality of relatively low voltage pins, said socket comprising:

A. a first support having an area receiving a plurality of first terminals and a structure having a passage therethrough at least partially open at both ends;

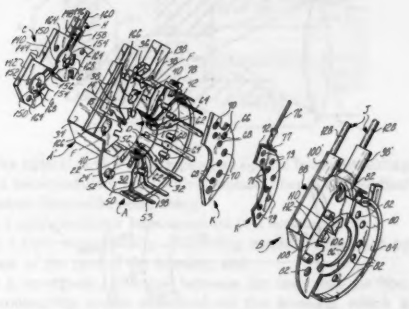
B. a plurality of first terminals, adapted to make electrical connection to said low voltage pins, received on said first support at said area;

C. a member mounted on said structure and at least partially closing one end of said passage;

D. a first high voltage spark gap means located adjacent said one end of and exposed to the interior of said passage and connecting means electrically connected to said first high voltage spark gap means and extending to a point external of said structure;

E. a second support assembled with said first support and having a part registering with and at least partially closing the other end of said passage;

F. a low voltage spark gap means comprising a ground ring and associated connecting means extending to a point external of said structure, and means comprising at least one of said member and said second support for mounting said ground ring in a position overlying and spaced from portions of said first terminals,



G. a second high voltage spark gap means located adjacent said other end of and exposed to the interior of said passage and spaced from said first high voltage spark gap means, and connecting means electrically connected to said second high voltage spark gap means and extending to a point external of said second support;

H. a second terminal, adapted to make electrical connection to said high voltage pin, mounted on said socket; and

I. means electrically connecting said second terminal and said second high voltage spark gap means.

4,199,216

TORQUE CONTROLLING SET SCREW FOR USE WITH THE CABLE OF SOLDERLESS CONNECTORS, OR THE LIKE

Carl E. Gryctko, Haddon Heights, N.J., assignor to I-T-E Imperial Corp., Spring House, Pa.

Division of Ser. No. 543,317, Jan. 23, 1975, Pat. No. 3,963,322.
This application Feb. 18, 1976, Ser. No. 659,166
Int. Cl.[2] H01R *11/10*
U.S. Cl. 339—272 R **4 Claims**

1. A torque controlling set screw, comprising:

a helically threaded screw shaft adapted to be tightened in a matingly threaded capped opening, said shaft having a shear strength sufficient to prevent its breaking at and beneath a predetermined maximum torque applied to said screw when said screw is being tightened in said matingly threaded capped opening;

a substantially flat head at one axial end of said screw shaft;

a substantially rectangular tool receiving recess in said head, said recess having a predetermined length;

a pair of shearable projections extending from said head, the distance between said projections being greater than said predetermined length whereby a flat head screwdriver

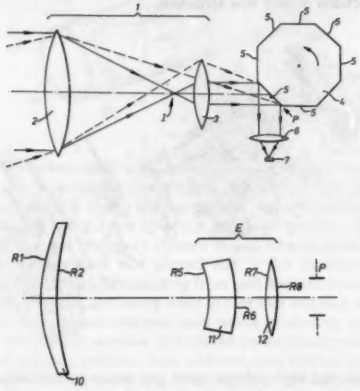
whose length is greater than said predetermined length can engage said projections but cannot engage said recess.

4,199,217

INFRA-RED OPTICAL SYSTEMS

Philip J. Rogers, Clwyd, Wales, assignor to Pilkington P. E. Limited, St. Helens, England

Filed May 17, 1978, Ser. No. 906,439
Int. Cl.[2] G02B 25/00, 15/04, 15/10, 27/17
U.S. Cl. 350—1.2 18 Claims



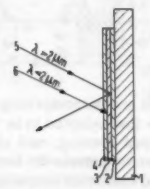
1. An "eye-piece" system for use in a non-Gallilean afocal infra-red optical system, the "eye-piece" system comprising two lens elements, the back element of the two being positive in power and having a back surface which is either convex or concave and a front surface which is convex, and the front element of the two being of meniscus form having a back surface which is convex and a front surface which is concave with the radius of curvature of the convex back surface greater than that of the concave front surface but the thickness of the front element being such as to give it positive power.

4,199,218

WARM LIGHT REFLECTOR

Peter-Wilhelm Steinhage, Wiesbaden, and Claus Kunze, Taunusstein, both of Fed. Rep. of Germany, assignors to Heimann GmbH, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,164
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734142
Int. Cl.[2] G02B 13/14, 5/20
U.S. Cl. 350—1.7 3 Claims



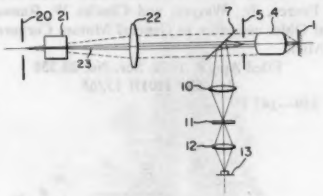
1. A warm light reflector which reflects electromagnetic waves above a predetermined limiting wavelength lying in the infrared range and which absorbs those lying below said predetermined minimum wavelength, said reflector carrying a coating of lead sulfide on the reflecting surface thereof, said coating consisting of two layers lying one on top of the other, with said first layer being a metallically brilliant layer of lead sulfide, and said second layer being a finely-flocked layer of individual agglomerates of lead sulfide.

4,199,219

DEVICE FOR SCANNING AN OBJECT WITH A LIGHT BEAM

Akiyoshi Suzki, Tokyo, and Yoichi Hirabayashi, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1977, Ser. No. 790,072
Int. Cl.[2] G02B 27/17
U.S. Cl. 350—6.1 4 Claims



1. A device for scanning an object having a flat reflection surface and an inclined surface with a certain inclination with respect to the flat reflection surface, comprising:

a. means for forming a relatively thin fixed light beam;

b. a deflector for deflecting the light beam from the light forming means to scan across the object;

c. a lens system for receiving the deflected light beam from said deflector, including an objective lens facing the object, the optical axis of which objective lens is perpendicular to the flat reflection surface of said object and having a light source side focal plane, said objective lens being substantially so disposed that said deflected light beam continuously passes through the center of said light source side focal plane as it is being deflected;

d. a light detector for detecting light which has been reflected from said object and passed through said objective lens; and

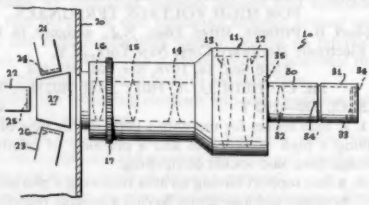
e. optical filter means interposed between said objective lens and said light detector, for intercepting light from the flat reflection surface of said object and for directing the light from the inclined reflection surface to said light detector.

4,199,220

LENS SYSTEM WITH RETICLE AND DIFFUSER GLASS

John T. Casagrande, 2606 N. Parish Pl., Burbank, Calif. 91504

Filed Sep. 12, 1978, Ser. No. 941,463
Int. Cl.[2] G02B 7/04; G03B 13/18; G02B 27/32, 27/40
U.S. Cl. 350—78 1 Claim



1. A lens system comprising the combination of:

an elongated housing having a pair of slidable telescoping tubes;

a selected one of said tubes fixedly mounting a collimating lens;

the other of said tubes carrying a reticle therein in coaxial alignment with said collimating lens;

means cooperatively carried on said pair of tubes for selectively holding said tubes in a predetermined relationship whereby said reticle is on the focal plane of said lens;

a camera;

an adapter flange threadably carried on the end of said lens tube opposite to its end in slidable relationship with said reticle tube for mounting said housing onto a conventional camera or zoom lens construction;

a diffuser glass mounted on said reticle tube in close proximity to said reticle and located on the opposite side of said reticle from its side facing said collimating lens;

said holding means for said pair of tubes comprises a releasable screw device threadably engageable with said tubes at their reseptive telescoping ends;

said reticle includes a pattern of crossed lines arranged in horizontal and vertical planes perpendicular to each other so as to form a grid;

said reticle and said diffuser glass are immediately next to each other;

said diffuser glass is arranged so as to put said reticle at the focal length of said lens thereby placing said reticle at infinity;

means interposed between said lens tube and said camera for adjustably determining back focal distance including a focus ring for bringing said reticle into focus; and

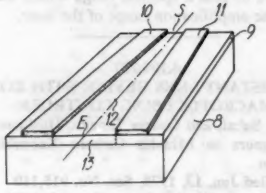
indicia carried on said ring and operable with a scale to measure back focal distance.

4,199,221

ELECTRO-OPTIC THIN-FILM WAVEGUIDE MODULATOR DEVICE

Loic A. Rivoallan, Tossen Hat, Kermoroc'H, France (22140), and Francois P. Favre, Residence du Levant, Perros-Guirec, France (22700)

Filed Dec. 8, 1977, Ser. No. 858,553
Claims priority, application France, Dec. 15, 1976, 76 38437
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.14 **3 Claims**



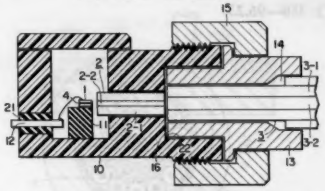
1. An electro-optical device comprising means for modulating light waves guided in a thin layer made of an electro-optical material, the refractive index of said thin layer being larger than the refractive index of a substrate supporting said thin layer, said thin layer being thick enough for guiding one or several light wave modes, conductive metal clad means deposited on said thin layer, a controllable voltage source means connected to said clad means, said conductive clads being arranged in a side-by-side relationship with respect to each other in order to define between them a light waveguide, said conductive clads being geometrically convergent from inlet to outlet and extending from a relatively wide waveguide inlet to a relatively narrow waveguide outlet, wherein the distance between said convergent conductive clads at said waveguide inlet is wide enough for transversally guiding one or several light wave modes while the distance between said convergent conductive clads at said waveguide outlet is too narrow for such a guiding when no voltage difference is applied to said conductive clads, respectively.

4,199,222

OPTICAL DEVICE WITH A LASER-TO-FIBER COUPLER

Ichiro Ikushima, Kokubunji; Mitsuo Tanaka, Ohme, and Minoru Maeda, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 8, 1977, Ser. No. 849,645
Claims priority, application Japan, Nov. 12, 1976, 51-135322
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.19 **14 Claims**



1. An optical device for coupling an optical beam emanating from a semiconductor laser with an optical fiber in longitudinal alignment therewith, comprising:

(a) a semiconductor laser mounted in a housing;

(b) a fiber mechanically connecting means constructed by use of the part of the housing; and

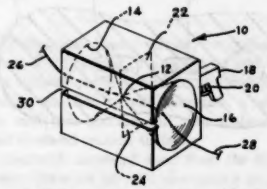
(c) a waveguide, arranged between the laser and the fiber connecting means and fixed on the housing, which is constructed of a core having a uniform refractive index and a cladding layer having a refractive index smaller than that of the core, wherein at least one of the core radius and numerical aperture of the waveguide is smaller than that of an optical fiber to be coupled with the laser optically by use of the fiber connecting means, and wherein the surface of at least one of two end faces of the waveguide is roughened.

4,199,223

PORTABLE OPTICAL FIBER COUPLING DEVICE

Nicholas F. Yannoni, Newton, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 30, 1978, Ser. No. 891,876
Int. Cl.[2] G02B 2/14
U.S. Cl. 350—96.21 **5 Claims**

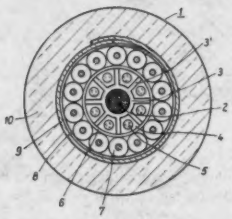


1. A portable optical fiber coupling device comprising: a block of solid insulative material; a passage for optical fiber located along the central axis of said block; piezoelectric means for generating an electrical potential difference fixed to said block; a pair of electrodes positioned in the block adjacent said passage and connected to said means for generating whereby a potential created by the generating means will cause an arc between said electrodes thereby coupling fibers positioned therebetween.

4,199,224
COMMUNICATION CABLE UTILIZING OPTICAL TRANSMISSION ELEMENTS

Ulrich Oestreich, Münich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 10, 1975, Ser. No. 621,400
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1974, 2449439
Int. Cl.² G02B 5/16
U.S. Cl. 350—96.23 10 Claims

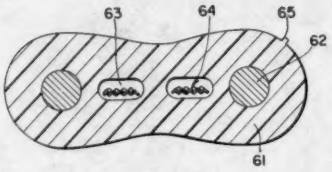


1. An optical cable for information transmission comprising:
(a) a core of steel wires;
(b) a plastic profile member surrounding said core, said member having a cross section in the form of the spokes of a wheel with the spokes forming radial chambers, the chambers disposed about the cable axis in helical fashion;
(c) optical elements movably disposed in each of said chambers;
(d) a covering of thermoplastic material applied over the circumference of said plastic member covering the outer radial extreme of said chambers; and
(e) an outer jacket.

4,199,225
OPTICAL GUIDES

Raymond J. Slaughter, Chiselhurst, and Derek Chadwick, Stretford, both of England, assignors to BICC Limited, London, England

Filed Apr. 7, 1978, Ser. No. 894,345
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.23 17 Claims

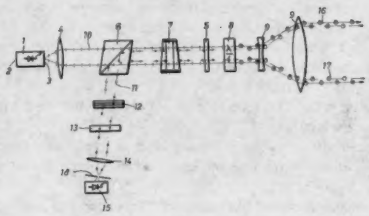


1. An optical cable comprising an extruded elongate body of rubber or plastics material having at least one bore extending lengthwise in the body; at least one substantially flat flexible support member comprising at least one flexible tape which is housed loosely in the bore or at least one of the bores and which, viewed in transverse cross section, is corrugated so that it has a plurality of troughs extending along its length; at least two flexible optical guides secured in at least two of said troughs; and, embedded in said extruded elongate body and arranged side-by-side with said bore or bores, at least one separate elongate reinforcing member.

4,199,226
LASER TRANSMITTING AND RECEIVING DEVICE

Heinz P. Weber, Kehrsatz; Claude Voumard, Bern, both of Switzerland, and Rene P. Salathe, Berkeley Heights, N.J., assignors to Institut für Angewandte Physik der Universtitat Bern, Bern, Switzerland

Filed Mar. 16, 1978, Ser. No. 887,056
Claims priority, application Switzerland, Apr. 1, 1977, 4117/77
Int. Cl.² G02B 27/00
U.S. Cl. 350—157 15 Claims

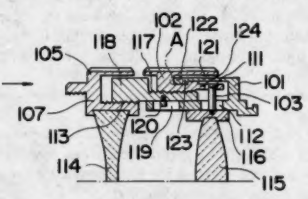


1. A transmission and reception device comprising a laser for the production and radiation of monochromatic light, having an active medium disposed within an optical resonator, said resonator being supportive of a light beam and having a decoupling mirror for the exit of the light beam; a photodetector for detecting a reflected part of the radiated light beam; a polarizer arranged in the beam path of said resonator and a polarization converter arranged outside said resonator in the beam path of the radiated light, said polarizer being operative to pass one of two light beam components linearly polarized perpendicularly to one another and to deflect the other linearly polarized component out of the resonator onto the photodetector and said polarization converter being operative to convert linearly-polarized light into circularly-polarized light and vice versa; and a filter arranged in the beam path of said resonator, between said polarizer and said decoupling mirror, said filter being operative to pass a spectral range which lies in and is smaller than the amplification range of the laser.

4,199,227
SHOCK RESISTANT LENS DEVICE WITH ZOOM AND MACROFOCUSING CONTROLS

Kyozo Uesugi, Sakai, and Osamu Tanaka, Haskimoto, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 13, 1978, Ser. No. 915,110
Claims priority, application Japan, Jun. 14, 1977, 52/69431
Int. Cl.² G02B 7/10
U.S. Cl. 350—187 13 Claims



1. A lens barrel for a lens system including first and second lens groups and having a common optical axis, comprising:
an axially stationary cylindrical member coaxial with said optical axis and having a helicoid thread; an externally rotatable first operating ring;

a first movable lens frame holding said first lens group and movable along the optical axis and having helicoid threads;

a helicoid cylinder positioned between said first movable lens frame and said cylindrical member and having helicoid threads and threadedly coupled with said first movable lens frame and said cylindrical member through the helicoid threads;

a first operating means for interconnecting said operating ring with said helicoid cylinder, and for moving said helicoid cylinder along the optical axis, when said first operating ring is rotated;

a second movable lens frame holding and second lens group and movable along the optical axis;

a second operating means for interconnecting said second movable lens frame with said first operating ring, so that said second movable lens frame is moved along the optical axis when said first operating ring is rotated; and

an externally rotatable second operating ring associated with said first movable lens frame to move said first movable lens frame along the optical axis.

4,199,228

METHOD OF FABRICATION OF A LIQUID-DISPLAY CELL AND A CELL OBTAINED BY MEANS OF SAID METHOD

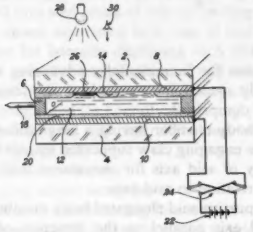
Louis Destannes, Eybens; Jacques Duchene, Grenoble, and Robert Meyer, Giéres, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 24, 1978, Ser. No. 909,116

Claims priority, application France, Jun. 1, 1977, 77 16676

Int. Cl.² G02F 1/13

U.S. Cl. 350—320 **8 Claims**



1. A method of fabrication of a liquid-film display cell, wherein sad method consists:

in forming a first insulating plate coated with an electrode,

in depositing at the periphery of said plate a wall constituted by a first material which is chemically inert with respect to said film and fusible at a first temperature,

in placing on and through said wall at least one filler tube constituted by a second material having a higher melting point than said first temperature,

in forming a second transparent insulating plate coated with a semitransparent electrode,

in sealing the tube in the wall aforesaid and the first and second plates on said wall by heating the elements of the cell to a temperature at least equal to said first temperature and lower than the melting point of the second material, then in allowing the elements of the cell to cool.

4,199,229

SOLID STATE DISPLAY DEVICE

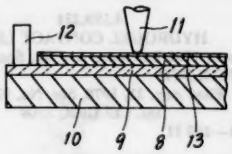
Akio Yamashita, Kawanishi; Akihiro Imai, Kyoto, and Yoshiaki Hayashi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 17, 1977, Ser. No. 825,434

Claims priority, application Japan, Aug. 31, 1976, 51/104796; Oct. 27, 1976, 51/129655; Nov. 5, 1976, 51/133377

Int. Cl.² G02F 1/17

U.S. Cl. 350—357 **14 Claims**



1. A solid state display device consisting essentially in the sequential layers of:

(a) a transparent glass substrate;

(b) a transparent electrode layer;

(c) n-type semiconductor compound layer;

(d) an ion-polarizing solid state semiconductor compound layer wherein said compound is selected from the group consisting of lead fluoride, cadmium fluoride, strontium fluoride, lead monoxide, lead chloride, cadmium oxide, cadmium chloride, thallium fluoride, mercury fluoride and barium fluoride;

(e) a p-type semiconductor layer; and

(f) an outermost electrode layer, all of said layers (b) through (f) inclusive being sequentially vapor deposited.

4,199,230

ELECTROCHROMIC DISPLAY DEVICE

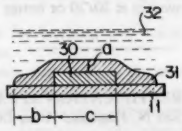
Hiroshi Morita, Machida; Tadao Miura, Yokohama, and Hiroshi Washida, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 9, 1978, Ser. No. 904,301

Claims priority, application Japan, May 11, 1977, 52-54065

Int. Cl.² G02F 1/17

U.S. Cl. 350—357 **5 Claims**



1. An electrochromic display device, comprising:

a first electrode composed of a substrate and a conductive film of a desired pattern, said conductive film having a first surface attached to said substrate, a second surface opposite said first surface and side surfaces contiguous with said first and second surfaces;

a counter electrode disposed apart from the first electrode;

an electrolyte between the two electrodes; and

an electrochromic material layer formed on said conductive film, said electrochromic material covering the entire said second surface of said conductive film and extending beyond said side surfaces of said conductive film so as to prevent said side surfaces from directly contacting said electrolyte, the horizontal length b which said electrochromic material layer extends beyond said side surfaces of the conductive film of said first electrode meeting the following equation:

$$a \leqq b \leqq \sqrt{-4Dr \ln A}$$

where,

"a" is the thickness of the electrochromic material layer,

"D" is the electron diffusion coefficient in the electrochromic material layer,

"τ" is the time during which the human eye is capable of catching the change of the external light, and

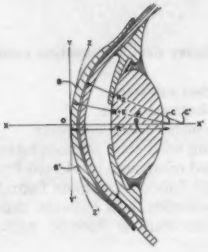
"A" is the color density discrimination capacity of the human eye.

4,199,231

HYDROGEL CONTACT LENS

Carl H. Evans, 1732 Lawrence Ave. E., Scarborough, Ontario, Canada (M1R 2Y1)

Filed Aug. 21, 1978, Ser. No. 934,714
Int. Cl.[2] G02C 7/04
U.S. Cl. 351—160 H **16 Claims**



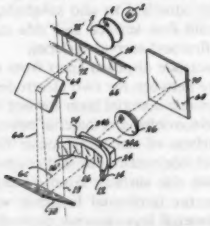
1. A contact lens of hydrophilic, soft, pliable gel ophthalmic plastic material, said lens having a back surface conforming to the corneal surface of the wearer's eye and having an ellipsoidal front surface providing an aspheric optic zone which is a surface of revolution of the curve $\rho=R+kR(1-\cos\theta)/(1-+\cos\theta)$ where R is the radius of curvature of a spherical lens whose power is approximately equal to the most hyperopic or least myopic power meridian of the wearer's ametropia plus about one-half of any presbyopic addition required by the wearer, and k is a constant of eccentricity which is within the range of 0.005 to 0.1, said R and k values being such that the visual acuity of the wearer is 20/20 or better both for distance and near vision.

4,199,232

OPTICAL RECTIFICATION APPARATUS

Robert A. Olodort, 536 N. Highland Ave., Los Angeles, Calif. 90036

Continuation-in-part of Ser. No. 699,615, Jun. 25, 1976, abandoned. This application Jan. 27, 1978, Ser. No. 873,146
Int. Cl.[2] G03B 41/04
U.S. Cl. 352—113 **8 Claims**



1. An optical rectification system for producing a stationary image of a frame of a moving film and a succession of superimposed stationary images from successive frames of the moving film, comprising in combination:

a hollow cylindrical prism of optically transmissive material having a central axis and an external surface of circular cross section concentric with the central axis, having an internal surface whose cross section is a regular polygon with its center on the central axis, said hollow cylindrical prism mounted for rotation about the central axis;

a stationary plano-concave cylindrical lens positioned so that its concave surface is adjacent to but spaced from said external surface of said hollow cylindrical prism, said concave surface being concentric with said central axis;

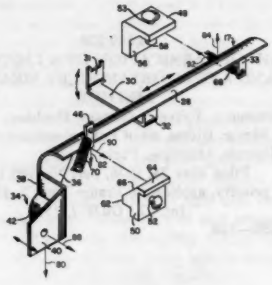
said hollow cylindrical prism and said stationary plano-concave cylindrical lens positioned with respect to the film so that the light from the film passes radially outwardly through said internal and external surfaces and through said plano-concave cylindrical lens.

4,199,233

FEED SHUTTLE MECHANISM FOR MOTION PICTURE FILM STRIPS

Donald T. Scholz, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 756,330, Jan. 3, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,674
Int. Cl.[2] G03B 1/22
U.S. Cl. 352—194 **13 Claims**



1. A mechanism for incrementally advancing a film strip having uniformly spaced apertures along the length thereof, said mechanism comprising:

an elongated body member having a longitudinal axis;

a film aperture engaging claw supported by said body member laterally of said axis for movement with said body member in relation to said axis;

means for supporting said elongated body member with said longitudinal axis parallel to the direction of film feed including bearing means for engaging said elongated member at two support locations spaced at opposite axial ends of said elongated body member and in opposite radial quadrants concentric with said axis, and spring means for yieldably retaining said body member into engagement with each of said support locations whereby said body member is restrained against radial movement with respect to said longitudinal axis; and

means for reciprocating said body member with respect to said axis through repeated cycles, each cycle including advance and retract strokes, and for rotating said body member about said longitudinal axis to move said claw to a film aperture engaging position during said advance stroke and to a retracted disengaged position during said retract stroke, said reciprocating and rotating means further acting upon said body member during said repeated cycles to encourage rotation of said body member about an axis perpendicular to said longitudinal axis to assist said

spring means in retaining said body member in engagement with each of said support locations.

4,199,234

SLIDE PROJECTOR APPARATUS

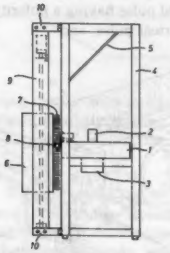
Bruno Meyer, Lindenstr. 2, 5238 Hachenburg, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,955

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810883

Int. Cl.[2] G03B *23/04;* B65H *3/32*

U.S. Cl. 353—116 **17 Claims**



1. In a slide projecting apparatus which includes:

a projector for projecting a light beam along a path and having a slide projecting station located in a plane which crosses said path;

at least one magazine with a succession of laterally open cells, each for slidably removable receipt of a respective slide the magazine having a disposition wherein said magazine extends along said path but being laterally displaced therefrom;

means for axially moving said succession of cells relative to said projecting station so as to make it possible to bring each cell into said plane of said projecting station; and

changing means associated with one of said projector and magazine for laterally displacing such slide as is in such said cell as is then in said plane of said projecting station, along said plane into said path for projection of said beam therethrough, and for laterally displacingly returning such slide as is in said path laterally along said plane into a respective said cell,

the improvement wherein:

said changing means comprises:

two toggle levers each having first and second opposite end portions and means journalling each toggle lever for swivelling about an axis between said first and second end portions thereof;

drivable eccentric means in operative contact with the respective first end portions of the two toggle levers, mounted for movement between a first condition wherein the second end portions of two toggle levers are located relatively nearer to one another and a second condition wherein the second end portions of the two toggle levers are located relatively further apart;

the said second end portions each including a driven tractive surface element means in said plane and means for reversibly driving said tractive surface element in said plane;

said tractive surface element means being disposed to frictionally engage opposite edges of such slide as is located in said plane, whether in said magazine or in said projector or in transit therebetween, only when said toggle levers are in said first condition, for transferring selected slides back and forth between said magazine and said projector.

4,199,235

CAMERA WITH AUTOFOCUSING DEVICE

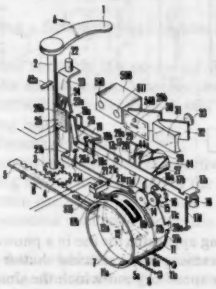
Mutsuhide Matsuda; Shuichi Tamura, both of Yokohama, and Hideo Tamamura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 962,074

Claims priority, application Japan, Nov. 26, 1977, 52-141813; Dec. 2, 1977, 52-144741

Int. Cl.[2] G03B *3/10, 7/08*

U.S. Cl. 354—25 **3 Claims**



1. In a camera having an automatic focus adjusting device and an automatic exposure control device, the combination comprises:

(a) a distance measuring circuit including a light receiving element;

(b) a photo-taking lens movably supported for focusing;

(c) an exposure meter;

(d) a scanning member for scanning a pointer of said exposure meter;

(e) latch means for latching said scanning member in an initial position;

(f) stopping means responsive to the output of said distance measuring circuit to be moved for engagement with or disengagement from said photo-taking lens, whereby movement and stoppage of said photo-taking lens is controlled;

(g) a release member arranged upon depression of a shutter button to be moved to a first region for the start of operation of said distance measuring circuit and therefrom to a second region for the start of focusing movement of said photo-taking lens;

(h) preventing means for preventing said release member from moving from said first movement region to said second movement region;

(i) said stopping means being moved in response to the distance measurement completion signal of said distance measuring circuit so that it is taken out of engagement with said photo-taking lens, and upon acting on said preventing means permits movement of said release member to said second movement region; and

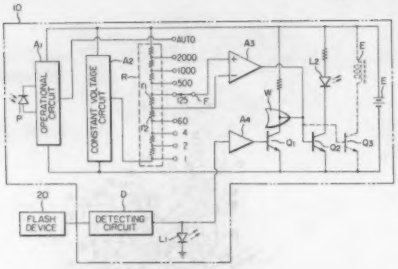
(j) said latch means being moved to release the latching of said scanning member when said release member is moved to said second region, causing said photo-taking lens to perform focusing operation and causing said scanning member to perform exposure determining operation.

4,199,236

SYNCHRONIZING SPEED WARNING APPARATUS FOR CAMERA

Tetsuro Goto, Funabashi, and Hiroshi Hasegawa, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 6, 1978, Ser. No. 922,444
Claims priority, application Japan, Jul. 22, 1977, 52-97094[U]
Int. Cl.[2] G03B *7/08, 15/05, 17/18*
U.S. Cl. 354—50 **5 Claims**



1. A warning apparatus for use in a photographic camera for providing a warning that a selected shutter speed is faster than a limit shutter speed beyond which the shutter is not synchronizable with the light emission from a flash device, comprising:

means for generating a standard voltage corresponding to the limit shutter speed;

means for generating an output voltage corresponding to the selected shutter speed;

comparator means for comparing said standard voltage and said output voltage and for generating a signal representative of the result of said comparison;

a charge completion detection circuit adapted for connection to the flash device for generating a charge completion signal upon completion of charging of the flash device; and

control means connected to said comparator means and said detection circuit and adapted for controlling a warning indicator to provide a warning indication upon receipt of both said charge completion signal and a signal from said comparator means indicating that the selected shutter speed is faster than the limit shutter speed.

4,199,237

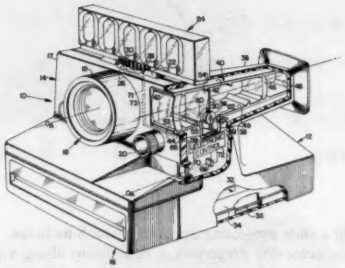
LOW SCENE BRIGHTNESS INDICATOR FOR USE IN A PHOTOGRAPHIC CAMERA

Thomas J. Savage, Randolph, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 27, 1977, Ser. No. 846,177
Int. Cl.[2] G03B *17/20*
U.S. Cl. 354—60 E **18 Claims**

1. Camera apparatus of the type which has a distinct ambient exposure mode of operation and a distinct flash exposure mode of operation in which the camera utilizes an artificial light source to illuminate a scene to be photographed, said apparatus comprising:

means for detecting the brightness of at least a portion of a scene to be photographed and providing an electrical output signal having a first characteristic whenever the scene brightness changes from a level below a predetermined reference scene brightness to a level at least equal to said predetermined reference scene brightness and having a second characteristic whenever the scene brightness changes from a level above said predetermined reference scene brightness to a level at least equal to said predetermined reference scene brightness, said predetermined reference scene brightness level defining a threshold scene brightness value above which said camera apparatus should be used in its ambient exposure mode of operation and below which said camera apparatus should be used in its flash exposure mode of operation with an artificial light source, said brightness detecting and output signal providing means comprising photodetector means for receiving light from said at least a portion of the scene to be photographed and providing an electrical output signal whose magnitude varies as a function of the intensity of the scene brightness and circuit means for continuously monitoring said electrical output signal of said photodetector means and for providing said electrical output signal having said first and said second characteristics wherein said output signal having said first characteristic comprises a first electrical pulse having a given polarity and wherein said output signal having said second characteristic comprises a second electrical pulse having a polarity opposite to that of said first electrical pulse; and



a bistable magnetic indicator electrically energizable by said electrical output signal to provide a visual signal which indicates to a camera user which of said camera apparatus' exposure modes of operation should be used, said magnetic indicator being mounted with said camera apparatus for movement between a first stable position which indicates that said camera apparatus should be used in its flash exposure mode of operation with an artificial light source and a second stable position which indicates that said camera apparatus can be used in its ambient exposure mode of operation, said magnetic indicator being movable into its said first stable position in response to said electrical output signal when it has its said second characteristic and into its said second stable position in response to said electrical output when it has its said first characteristic.

4,199,238

MINIATURE CAMERA PROBE

Jon P. Boudreau, 140 Hesperus Ave., Gloucester, Mass. 01930

Filed Mar. 12, 1979, Ser. No. 19,474
Int. Cl.[2] A61B *1/04*; G03B *29/00*
U.S. Cl. 354—62 **12 Claims**

1. A miniature camera probe comprising:

an elongate housing;

a fiber optic faceplate proximate a first end of said elongate housing;

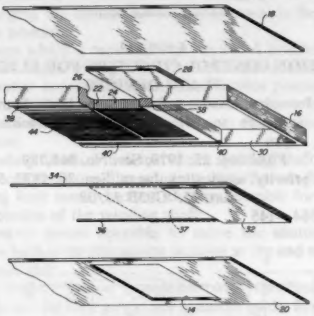
an aperture in said housing at one face of said fiber optic faceplate;

a film holder in said housing at the other face of said fiber optic faceplate;

a shutter in said elongate housing for controlling illumination of said faceplate through said aperture;

a fiber optic light source extending in said elongate housing

from the face of said fiber optic faceplate proximate said aperture to the other end of said elongate housing; and



a shutter actuating device extending from said shutter to said other end of said elongate housing.

4,199,239

CAMERA

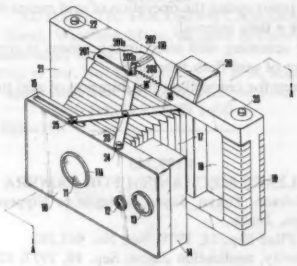
Takashi Uchiyama, Yokohama; Ryoichi Suzuki, Kawasaki; Fumio Ito, Yokohama; Wataru Nagasaka, Tokyo; Youichi Okuno, and Mutsuhide Matsuda, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

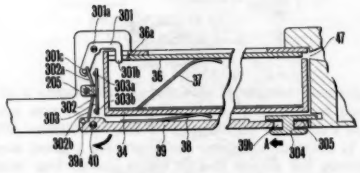
Filed Mar. 9, 1977, Ser. No. 775,886

Claims priority, application Japan, Mar. 12, 1976, 51-27571; Mar. 12, 1976, 51-27572

Int. Cl.[2] G03B *17/04, 17/52*

U.S. Cl. 354—86 **11 Claims**





1. A camera comprising:

(a) a housing having a film-receiving chamber for loading a film which has a loading opening through which the film is loaded and a battery-receiving chamber for containing a power source battery;

(b) an opening and closing cover to selectively cover said film loading opening;

(c) a driving means to receive the power supplied from said battery for driving and advancing the film loaded into said chamber, wherein said means is electrically connected to said battery;

(d) a detecting means in said housing to automatically detect an absence of said film in said film-receiving chamber;

(e) a first switch in said housing to respond to said detecting means for releasing the electric connection between said driving means and said battery; and

(f) a second switch in said housing for testing which makes said electrical connection between said driving means and said battery without any relationship with said switch in response to an opening action of said opening and closing cover.

3. A camera comprising:

(a) a rear housing for mounting a power source battery including:

a housing having a film-receiving chamber for loading a film;

connector means to guide the power of the battery to outside of the rear housing, wherein one end of said means is electrically connected with said battery;

(b) a front housing including:

an automatic focusing device;

connector means to input the power to activate said automatic focusing device from outside of the front housing device, wherein one end of said means is

electrically connected with said automatic focusing device; and

(c) a connecting device which connects said rear housing to said front housing, the connecting device including:

bellows which shields from light a space formed between said rear housing and said front housing;

folding means which controls the extension and contraction of said bellows to permit adjustment of the distance between the rear and front housing to a distance suitable for photographing and also to permit bringing the rear and front housings into close contact with each other to make the camera into a shape suitable for carrying; and

a flexible wiring board to electrically connect said battery of the rear housing with said automatic focusing device of the front housing;

wherein said board is tightly stuck with said bellows and has one end electrically connected with the other end of said connector means of the rear housing and has the other end electrically connected with the other end of said connector means of the front housing, respectively, and wherein said folding means is provided with a main switch operating means which closes a main switch disposed inside said rear housing when said bellows is stretched out.

4,199,240

FILM PACK FOR SMALL FORMAT FILM UNITS

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1978, Ser. No. 902,061

Int. Cl.[2] G03B *17/50, 19/10, 13/12, 17/26*

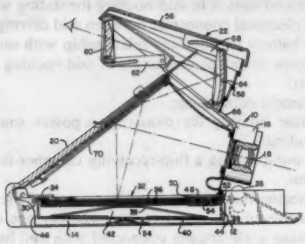
U.S. Cl. 354—86 **21 Claims**

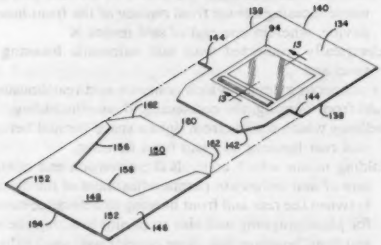
1. In a self-processing photographic apparatus including a camera and a film pack container normally intended to operate with a standard film pack in which film units are successively presented at a window in a marginal wall of a film pack container and allowed to be withdrawn from a slot in the container, the camera having a well to receive and position the film pack container for exposure of the film unit through the container window, a processing roller pair through which each film unit is passed for withdrawal from the film pack container and ejection from the camera, and pick means for advancing each film unit from the film pack to the pressure nip of the processing roller pair, the improvement comprising:

a plurality of film unit assemblies stacked in the film pack container, each of said assemblies including a small format film unit having peripheral dimensions smaller than the container window and sheet-like carrier means having

peripheral dimensions complementing the interior dimensions of the container;

said carrier means including a carrier slide to support a said small format film unit within said carrier means to enable exposure of said unit before withdrawal of said carrier means from the container, and dark chamber means for receiving said carrier slide with its said small format film





unit and for light shielding said small format film unit during and just subsequent to withdrawal of said carrier means from the container, said dark chamber means being adapted for relative movement with respect to said carrier slide so as to position said film unit within said dark chamber means as said carrier means is withdrawn from said container.

4,199,241

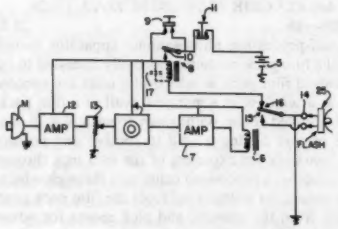
SOUND OR VIBRATION OPERATED FLASH SYNCHRONIZER FOR CAMERA

Jacob Rabinow, Bethesda, Md., assignor to Hall & Myers, Potomac, Md.

Continuation of Ser. No. 838,171, Sep. 29, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,263

Int. Cl.[2] G03B *15/03*

U.S. Cl. 354—129 **18 Claims**



1. A flash control device for a camera having a shutter comprising:

flash producing means, and

vibration responsive means responsive to the vibration resulting from a single normal opening of said shutter of said camera for operating said flash producing means to produce a flash.

4,199,242

OPERATION CONTROL CIRCUITRY FOR ELECTRONIC FLASH DEVICES

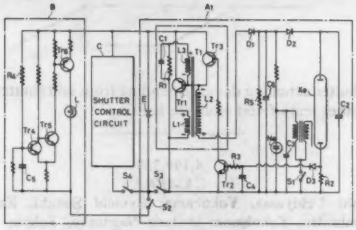
Hiroshi Hosomizu, Osaka, and Yoshiharu Ohta, Izumi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1978, Ser. No. 945,789

Claims priority, application Japan, Sep. 30, 1977, 52-118412

Int. Cl.[2] G03B *15/03*

U.S. Cl. 354—145 **10 Claims**



1. In a photographic camera system including an electronic flash device having a flash tube, means for energizing the flash tube and means for generating a high voltage for charging said means for energizing, a power source battery for energizing said means for generating, and circuit means energized by the power source battery, the combination comprising:

means for interrupting the operation of said means for generating for a time interval;

means for actuating said interrupting means in response to the firing of said flash tube; and

timing means for controlling the duration of said time interval.

4,199,243

RELEASE MECHANISM FOR CAMERA

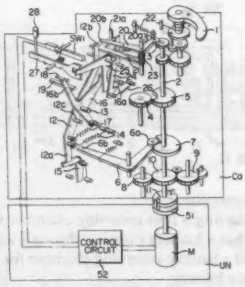
Yoshiyuki Nakano, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,163

Claims priority, application Japan, Sep. 19, 1977, 52-111601

Int. Cl.[2] G03B *1/18, 17/42*

U.S. Cl. 354—173 **10 Claims**



1. A release mechanism for a camera of the type which is capable of coupling a motor film winding unit thereto comprising:

shutter action means which is movable between a first action position and a second action position, the shutter action means causing a shutter to run when the shutter action means shifts to the second action position;

means urging the shutter action means towards the second action position;

lock means which is movable between a lock position where the lock means engages the shutter action means to lock the shutter action means at the first action position and a release position where the shutter action means is released by the lock means for movement to the second action position;

film winding means which includes a winding shaft adapted to be coupled to a film winding unit, the winding shaft having limit means secured thereto operable for limiting the rotation of the winding shaft;

first control means operable to move the shutter action means back to its first action position at the end of shutter running; and

second control means engageable with the first control means and the lock means and operable by the first control means to move between a limit means engaging position wherein the second control means engages the limit means to prevent rotation of the winding shaft and a limit means disengaging position wherein the second control means is disengaged from the limit means to permit rotation of the winding shaft, the second control means being moved from its limit means engaging position to its limit means disengaging position in response to the movement of the first control means in moving the shutter action means back to the first action position, the second control means being further operable to cause the lock means to move to the lock position to lock the shutter action means in the first action position when the second control means moves to the limit means disengaging position, thereby locking the shutter action means during film winding.

4,199,244

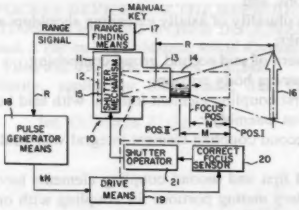
AUTOMATIC FOCUSING CAMERA

Edwin K. Shenk, Westford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 729,289, Oct. 4, 1976, abandoned. This application Jun. 16, 1978, Ser. No. 916,114

Int. Cl.[2] G03B *3/00*

U.S. Cl. 354—195 **31 Claims**



1. In a camera having variable means for focusing image forming rays from a subject on the camera focal plane, the specific variation of said focusing means at which a subject is in focus being a predetermined nonlinear function of subject distance, and having range finding means for generating a range parameter representative of subject distance, said range parameter being a timed duration thereby establishing a relationship between subject distance and time, the improvement comprising:

means responsive to said range parameter for generating a train of pulses whose number is representative of the specific variation of said focusing means at which said subject will be in focus, said pulse generating means including a counter for accumulating said pulses of said pulse train and a pulse generator with a preprogrammed time-variable pulse repetition rate, said preprogrammed repetition rate of said pulse generator being such that the contents of said counter, at the end of said range pulse, is representative of the specific variation of said focusing means at which said subject will be in focus; and

means for varying said focusing means in accordance with the total number of pulses in said train of pulses, said focus ranging means including means responsive to said end of said timed duration for varying said focusing means in accordance with the contents of said counter.

4,199,245

POWER SOURCE SWITCH FOR CAMERAS

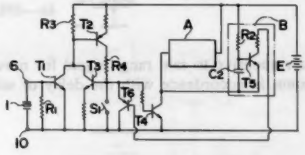
Masaaki Nakai, Nara; Yasuzi Kogure, Kawanishi; Masayoshi Sahara, Sennan, and Toshio Kobori, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 16, 1978, Ser. No. 934,126

Claims priority, application Japan, Aug. 19, 1977, 52-98779

Int. Cl.[2] G03B *17/38*

U.S. Cl. 354—266 **19 Claims**



1. In a camera including a shutter release and an electrical network and an electric current source for energizing said network, a switching device for connecting said current source to said network comprising a semi-conductor switch circuit having a controlled output connected between said network and current source and an electric signal control input and a mechanical electrical transducer responsive to pressure applied thereto and positioned where pressure is applied attendant to the initiation of said shutter release and having an electrical output coupled to said semi-conductor switch circuit input.

4,199,246

ULTRASONIC RANGING SYSTEM FOR A CAMERA

Juerg Muggli, Woburn, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 840,802, Oct. 11, 1977, abandoned, which is a continuation of Ser. No. 729,392, Oct. 4, 1976, abandoned. This application Jan. 5, 1979, Ser. No. 3,371

Int. Cl.[2] G03B *13/20*

U.S. Cl. 354—195 **53 Claims**

32. A camera having a sonic ranging system for automatically focusing the camera comprising:

(a) a moveable lens mount whose position at which a subject is in focus is functionally related to the subject distance;

(b) a shutter mechanism operatively associated with said lens mount;

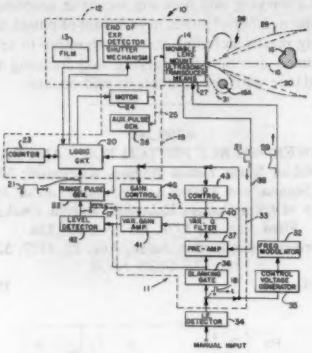
(c) selectively operable means for producing a keying pulse;

(d) a sonic transducer arrangement for producing a sonic frequency responsive to electrical modulation and for producing an electrical signal responsive to a sonic signal;

(e) a modulator driving said transducer arrangement for causing the latter to transmit a frequency-modulated burst of sonic energy toward a subject in response to the application of said keying pulse to said modulator;

(f) a receiver including a filter for processing an echo signal produced by said receiver in response to receipt by said transducer arrangement of an echo from said subject within a predetermined time interval following said keying pulse;

(g) means for varying the Q of said filter during said predetermined interval of time and for producing a range signal delayed with respect to said keying pulse by a period of time related to the subject distance; and



(h) means responsive to said range signal for moving said lens mount in accordance with the delay of said range signal.

4,199,247

PHOTOGRAPHIC DIAPHRAGM WITH TWO INDEPENDENT SETS OF LEAVES

Gerhard Schwarz, Münich, Fed. Rep. of Germany, assignor to Carl Zeiss Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Jun. 12, 1978, Ser. No. 914,207

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726144

Int. Cl.[2] G03B 9/06

U.S. Cl. 354—274 **3 Claims**

1. A photographic diaphragm comprising two sets of leaves, each set including a series of leaves, pivoted to swing from outer positions providing maximum aperture for passage of light along an optical axis centrally through the diaphragm inwardly toward inner positions providing reduced aperture, the leaves of one set lying approximately in a first plane, the leaves of the other set lying approximately in a second plane slightly spaced from the first plane in a direction along said optical axis, the leaves of each set being mounted to swing on individual pivots separate from the pivots of the leaves of the other set, a rotatable control ring, cam slots in said ring, there being an individual cam slot for each separate leaf of each set, each diaphragm leaf of both sets having a control pin engaged in its own individual one of said cam slots, said cam slots being shaped to cause swinging movement of the respective diaphragm leaves of both sets during at least part of a rotary movement of said control ring through its complete range of movement.

4,199,248

SELECTIVE COUPLING SYSTEM FOR CAMERAS

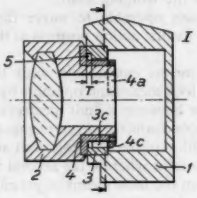
Werner Schlapp, Asslar, and Willi Wiessner, Wetzlar, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,699

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1976, 2653495

Int. Cl.[2] G03B 17/14

U.S. Cl. 354—286 **3 Claims**



1. A plurality of cameras forming at least first and second distinct groups, such as, for example, corresponding to different model types, said first group corresponding, for example, to older model cameras and said second group corresponding, for example, to newer model cameras;

each camera of said first group comprising:

(a) a camera body portion;

(b) a first coupling element integral with said body portion;

(c) a lens assembly;

(d) a second coupling element integral with said lens assembly;

(e) said first and second coupling elements having complimentary mating portions for coupling with one another;

(f) said complimentary mating portions comprising:

(1) a plurality of radially extending recesses and protrusions, and

(2) a plurality of axially extending shoulders and countersinks;

each camera of said second group comprising:

(a) a camera body portion;

(b) a first coupling element integral with said body portion;

(c) a lens assembly;

(d) a second coupling element integral with said lens assembly;

(e) said first and second coupling elements having complimentary mating portions for coupling with one another;

(f) said complimentary mating portions comprising:

(1) a plurality of radially extending recesses and protrusions, and

(2) a plurality of axially extending shoulders and countersinks;

said first coupling element of said second group having means for preventing coupling thereto of said second coupling element of said first group, said preventing means comprising at least one of said radially extending protrusions of said first coupling element of said second group, whereby, for example, older model lens assemblies may not be utilized with newer model camera body portions, and

said second coupling element of said second group adapted for coupling with said first coupling element of said first group, whereby, for example, said newer model lens assemblies may be utilized with said older model camera body portions.

4,199,249

METHOD AND APPARATUS FOR DUPLICATING BY MEANS OF AMMONIA GAS

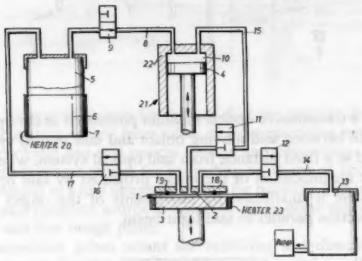
Ulrich Welp, Bad Nauheim, and Jürgen Sahlmann, Woelfersheim, both of Fed. Rep. of Germany, assignors to Microbox Dr. Welp Gesellschaft mit beschraenkter Haftung and Company, Bad Nauheim, Fed. Rep. of Germany

Filed Sep. 6, 1977, Ser. No. 830,819

Claims priority, application Austria, Sep. 23, 1976, 167077/76

Int. Cl.[2] G03D 7/00

U.S. Cl. 354—299 9 Claims



1. A method for developing a diazofilm by means of ammonia gas, comprising the steps of employing a closed flow circuit for said ammonia gas, including in said closed flow circuit a heatable and evacuable ammonia gas supply container partially filled with a liquid ammonia supply, and an evacuable developing chamber, evacuating by means of a pump the space in said supply container above liquid ammonia supply in said container to pressures below atmospheric pressure to thereby withdraw ammonia gas from said supply container, compressing said ammonia gas withdrawn from said evacuated ammonia gas supply container by the same pump to charge ammonia gas under increased pressure in excess of about 6 atmospheres gauge into said developing chamber, developing said diazofilm under said increased pressure and expanding said ammonia gas in said developing chamber back into said evacuated ammonia gas supply container.

4,199,250

FOLDING POCKET DEVICE FOR THE REPRODUCTION OF PHOTOGRAPHS AND OTHER DOCUMENTS

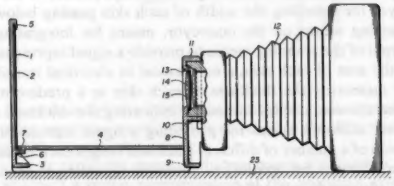
Paul A. Durand, 3 rue du Dr. Goldstein, 95410 Groslay, France

Filed Jul. 19, 1978, Ser. No. 926,148

Claims priority, application Switzerland, Jul. 22, 1977, 9031/77

Int. Cl.[2] G03B 27/32, 7/08

U.S. Cl. 355—39 2 Claims



1. Apparatus for adapting a camera which includes a photoelectric cell and which is resting on a planar surface for the reproduction of photographs or other documents comprising an optical system, a first support member for mounting said optical system on the lens of said camera, a second support member for mounting said photograph or other document to be reproduced, a base connecting said first support member to said second support member a predetermined distance from each other, said first support member, said base, and said second support member having a substantially U-shaped configuration when in use so that when said optical system is mounted on the lens of said camera, said apparatus and said camera are both resting side by side on said planar surface, the optical axis of said camera and said apparatus being in optical alignment and ready for use for said reproduction, and a diaphragm member mounted on said first support member for cooperation with said photoelectric cell whereby said diaphragm member can adjust the amount of light received by said photoelectric cell.

4,199,251

MICRO-FILMING APPARATUS

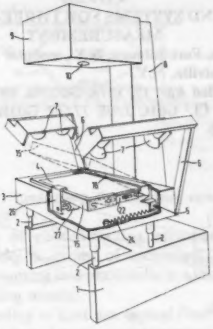
Hans Zimmet, Dresden, German Democratic Rep., assignor to VEB Pentacon Dresden Kamera- und Kinowerke, Dresden, German Democratic Rep.

Filed Feb. 5, 1979, Ser. No. 9,574

Claims priority, application German Democratic Rep., Feb. 7, 1978, 0320358

Int. Cl.[2] G03B 27/32, 27/62

U.S. Cl. 355—64 8 Claims



1. A micro-filming apparatus comprising

(a) an object table,

(b) a camera head arranged above said table,

(c) a frame pivotally mounted on said table,

(d) a glass plate and mounting therefor mounted on said frame, said glass plate being capable of movement perpendicularly of the plane of the frame to adjust the distance between the object and the film,

(e) setting sliders mounted on said frame movable between first and second positions,

(f) a handle attached to said sliders by which movement between said two positions is effected, and

(g) coacting means arranged between said sliders and the plate to effect perpendicular movement of said glass plate on movement of said sliders, wherein on movement of said sliders into the first position the lower surface of the glass plate is brought into the picture-taking plane and on movement into the second position the upper surface of the plate is brought into the picture-taking plane.

4,199,252

PHOTOGRAPHIC ENLARGING EXPOSURE METERS

Dirk J. Vermeulen, 86 Hamilton Ave., Craighall Park, Johannesburg, Transvaal Province, South Africa

Filed Sep. 20, 1978, Ser. No. 944,163

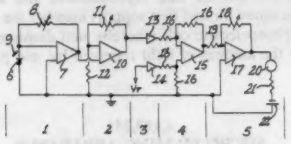
Claims priority, application South Africa, Sep. 20, 1977, 77/5612

Int. Cl.[2] G03B 27/78

U.S. Cl. 355—68 7 Claims

1. A photographic printing exposure meter comprising a light sensitive cell for producing an illuminance dependant

electrical signal, electronic circuitry connected to receive this signal and other predetermined signals related to parameters other than illuminance which affect printing density, to produce an output signal applied to a means for displaying a value of printing density of photographic paper characterized in that the electronic circuitry includes input means for receiving



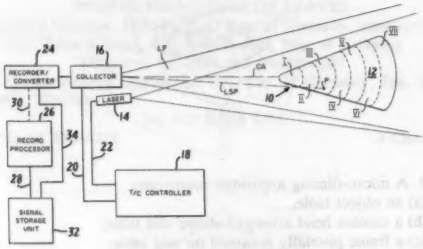
individually predetermined signals relating to the time duration of the illuminance, speed index of the photographic paper and contrast grade of photographic paper and is adapted to calculate and produce an output signal related to printing density and the display means is operable by this output signal over a range of values.

4,199,253

METHODS AND SYSTEMS FOR THREE-DIMENSIONAL MEASUREMENT

Joseph A. Ross, Fort Salonga, N.Y., assignor to Solid Photography Inc., Melville, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,572
Int. Cl.[2] G01C *3/08, 11/12;* G03B *35/00*
U.S. Cl. 356—5 **13 Claims**



1. In the method for determining the spatial location of points on the surface of an object by identifying a spatial line of sight to the point and the location of said point along said line of sight, the improvement wherein blanket radiant energy is projected onto the entirety of such object surface, and collections of radiant energy reflected by respective sets of one or more zones of said object surface, each of such sets having a zone overlapping a zone of another set and one or more of said sets including zones encompassing less than the entirety of said object surface, are made separately in accordance with respective time patterns which are mutually overlapping in time determined with respect to such radiant energy projection.

4,199,254

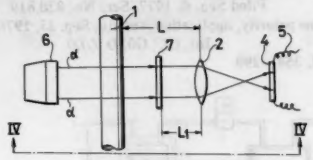
METHOD OF MEASURING THE QUANTITY OF MOVEMENT OF AN OBJECT

Akira Kobayashi, Konandai Jutaku No. 14-503, No. 856-3, Hino-cho, Konan-ku, Yokohama-shi, Kanagawa, Japan, and Susumu Ihara, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka; Akira Kobayashi, Yokohama and Keisoku Giken Co., Ltd., Yokohama, all of, Japan

Filed May 23, 1978, Ser. No. 908,613
Claims priority, application Japan, May 23, 1977, 52/59534
Int. Cl.[2] G01P *3/36*
U.S. Cl. 356—28 **11 Claims**

1. A method of measuring the quantity of movement of a moving object, of the type in which the surface irregularity of the moving object is projected through an optical system onto an optical detection device, wherein the improvement comprises:

directing a parallel light beam across the surface of said moving object to form an image of the silhouette thereof



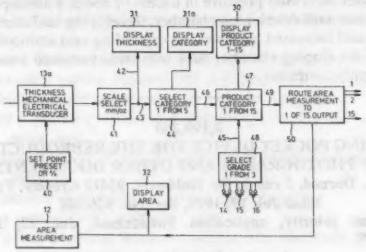
on a transmissive optical medium positioned in the optical path between said moving object and said optical system and at a fixed distance from said optical system, whereby the magnification of the image projected by said optical system is unaffected by movements of the object in a direction parallel to said light beam.

4,199,255

APPARATUS FOR USE IN GRADING HIDES, SKINS, PELTS AND THE LIKE

Raymond L. Wilson, Liverpool, England, and Leslie J. Tilley, Edinburgh, Scotland, assignors to Edward Wilson and Son Ltd., Midlothian, Scotland

Filed Aug. 23, 1977, Ser. No. 827,050
Int. Cl.[2] G01N *21/00, 21/16*
U.S. Cl. 356—72 **5 Claims**



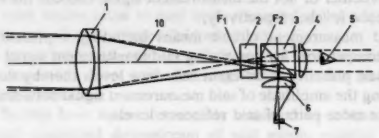
1. Apparatus, for grading skins, comprising an endless conveyor, photoelectric scanning means disposed above the conveyor for detecting the width of each skin passing below the scanning means on the conveyor, means for integrating the output of the scanning means to provide a signal representative of the area of each skin, a mechanical to electrical transducer for measuring the thickness of each skin at a predetermined point thereon, display means for indicating the thickness measured, selection means for providing a signal representing in which of a number of different thickness ranges each measured skin thickness lies, grading switches for allocating to each skin a quality grade selected from a predetermined number of quality grades, means for allocating to each skin a final product category computed from the thickness and quality gradings, means for summating the areas of skins of a particular product category, display means for indicating the allocated product category of each skin whereby the skins may be sorted as they are discharged from the conveyor, and display means indicating the batch area and total areas of the sorted and discharged skins.

4,199,256

OPTICAL SYSTEM

Ragnar Forshufvud, and Arnold Johansson, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 2, 1977, Ser. No. 856,874
Claims priority, application Sweden, Dec. 2, 1976, 7613513
Int. Cl.[2] G01C *1/00*
U.S. Cl. 356—247 14 Claims



1. An optical system for determining the angular deviation of a radiation source from a line of sight extending between a target object and said optical system, and comprising:

optical sensor means for projecting an image of said target object in a first image plane and for projecting an image of said radiation source in a second image plane spaced from said first image plane;

transparent prism means for receiving and directing said image of said target object toward an ocular and for receiving and directing said image of said radiation source toward a detector assembly;

sighting means located within said first image plane for visually aligning said optical sensor means with said target object; and

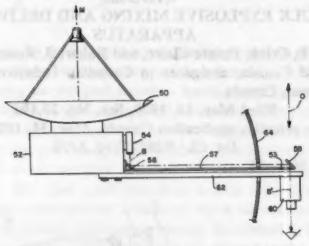
masking means located within said second image plane for selectively blocking said image of said radiation source from reaching said prism means.

4,199,257

PROJECTED RETICLE OPTICAL SIGHTING SYSTEM

Thomas J. Dosch, Orchard Park, and Ravinder Prakash, Cheektowaga, both of N.Y., assignors to Sierra Research Corporation, Buffalo, N.Y.

Filed Jun. 26, 1978, Ser. No. 919,203
Int. Cl.[2] G01B *21/10*
U.S. Cl. 356—252 10 Claims



1. An optical sighting system for aiming the main operative axis of an apparatus to which it is attached in the direction of a target, the system comprising:

(a) reticle projector means including means for forming the image of a reticle representative of the operative axis of the apparatus and means for collimating and projecting said image along a beam extending laterally outwardly with respect to said operative axis, the reticle projector means being mounted directly and rigidly on said apparatus;

(b) an optical sighting device carried by the apparatus and including a lens system having an optical axis;

(c) a supporting arm which is independent of the reticle projector means and which has an inner end attached to said apparatus at a mounting which is separate from the mounting of said reticle projector means and which has an outer end laterally offset outwardly beyond said apparatus, said outer end supporting the optical sighting device with its optical axis aligned substantially parallel to said main operative axis of the apparatus and intersecting the beam of the reticle image; and

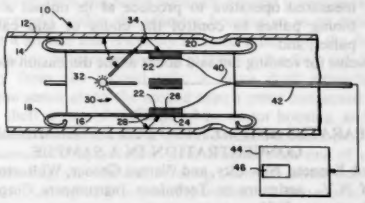
(d) directing means located along the optical axis of the sighting device and intercepting said projected reticle image beam and directing it into the optical device along a path whose axis bears a fixed and precisely predetermined angular relationship with said main operative axis.

4,199,258

DISTANCE MEASURING DEVICE AND METHOD

Gary J. Dau, Palo Alto, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 14, 1978, Ser. No. 896,350
Int. Cl.[2] G01B *11/14*
U.S. Cl. 356—378 4 Claims



1. A device for measuring the internal configuration of a tube, comprising:

(a) a plurality of photodetecting arrangements, each of which includes a group of individual photocells and means for mounting said photocells in a linear array; p1 (b) light producing means;

(c) means including at least one optical fiber associated with each of said photodetecting arrangements for directing a beam of light from said light producing means towards a point on the internal surface of said tube;

(d) means including a plurality of guides adapted for engagement against said inner surface of said tube for supporting said optical fibers and arrays of photocells within said tube relative to each other and to said internal surface such that

(i) each of said linear arrays of photocells extends in a direction parallel to the axis of said tube with said photocells confronting the internal surface thereof,

(ii) said points on said internal surface lie in a common plane normal to the axis of said tube, and

(iii) each of said beams is reflected off of a corresponding one of said points and onto a particular one of the photocells of an associated array, depending upon the distance between said corresponding point and associated array; and

(e) means for indicating which of said photocells receive said beams whereby to determine the distance between said points and associated arrays.

4,199,259

DETECTOR PULSE ENHANCEMENT CIRCUIT

David E. Harris, Columbus, Ohio, assignor to Autech, Columbus, Ohio

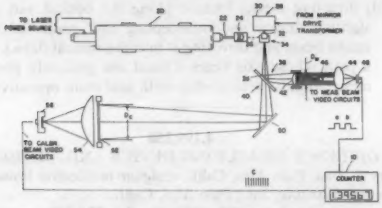
Filed Jun. 27, 1977, Ser. No. 811,702
Int. Cl.[2] G01B *11/08*
U.S. Cl. 356—387 7 Claims

1. In a measuring system wherein the count of a series of calibration pulses is initiated and stopped by a pulse derived from a workpiece dimension measuring signal, the improve-

ment in the circuit for forming said start and stop pulses comprising:

a waveshaping and rectifying circuit for converting said input signals to a substantially varying amplitude rectified signal;

a variable gain amplifier having unity gain at low signal conditions and a high gain at higher amplitude signals;



means for connecting said varying amplitude signal to said amplifier, said amplifier in response to said high amplitude rectified input signals representative of the dimension measured operative to produce at its output a train of timing pulses to control the count of said calibration pulses, and

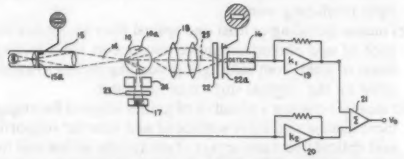
means for reading out said count as the dimension measured.

4,199,260

APPARATUS AND METHOD FOR DETERMINING THE CONCENTRATION IN A SAMPLE

Jacob Kusnetz, New City, and Warren Groner, Whitestone, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,411
Int. Cl.[2] G01N *21/48, 31/08*
U.S. Cl. 356—411 **29 Claims**



1. A method of determining the concentration of a constituent of a sample within a fluid carrier passing along a medium, the effective index of refraction of said medium being changed due to passage of said carrier therethrough, comprising the steps of:

(a) obtaining an optical measurement of light that is passed through said medium containing said sample; and

(b) compensating said optical measurement by substantially nullifying effects due to a change in said effective index of refraction of said medium due to passage of said fluid carrier therethrough which results from said fluid.

4,199,261

OPTICAL INTENSITY METER

Leon E. Tidd, San Francisco; Alan B. Scott, Mill Valley; Julius M. J. Madey, Fairfax, and Carter C. Collins, Mill Valley, all of Calif., assignors to Smith-Kettlewell Eye Research Foundation, San Francisco, Calif.

Filed Dec. 29, 1976, Ser. No. 755,332
Int. Cl.[2] G01N *21/48*
U.S. Cl. 356—448 **23 Claims**

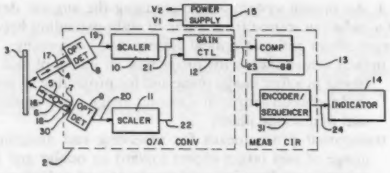
1. Apparatus for use by visually impared people for detecting an optical measurement level of a test sample comprising:

light source means for illuminating the test sample to cause light to emanate from the test sample to form the optical measurement level as a function of an optical property of the test sample and of the illuminating light,

an optical-to-analog converter for converting the light emanating from the test sample to an electrical analog measurement signal having an amplitude proportional to said optical measurement level,

measurement circuit means for measuring said measurement signal in relation to a plurality of different reference levels to provide a plurality of digital signals representing whether or not the measurement signal exceeds the reference levels, respectively,

said measurement circuit means including a plurality of comparators for comparing said measurement signal with said plurality of different reference levels thereby detecting the amplitude of said measurement signal between one or more pairs of said reference levels;



said plurality of comparators including first and second comparators simultaneously receiving said measurement signal for comparing said measurement signal with first and second reference levels, respectively, and including means for generating said first and second reference levels to establish a pretest optical measurement level for said test sample;

said plurality of comparators including a third comparator receiving said measurement signal for comparing said measurement signal with a third reference level and including means for generating said third reference level to establish a beginning-of-test optical measurement level for said test sample;

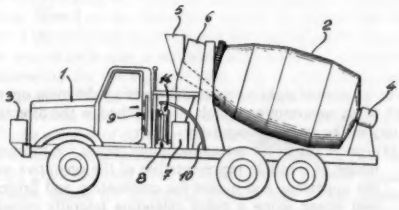
indicator means responsive to said digital signals for providing an indication, detectable by visually impared people, of said optical measurement level.

4,199,262

BULK EXPLOSIVE MIXING AND DELIVERY APPARATUS

William E. Cribb, Pointe Claire, and Robert J. Roach, Sudbury, both of Canada, assignors to Canadian Industries Limited, Montreal, Canada

Filed Mar. 13, 1979, Ser. No. 20,194
Claims priority, application Canada, Mar. 31, 1978, 300255
Int. Cl.[2] B28C *7/16, 5/18*
U.S. Cl. 366—44 **9 Claims**



1. An apparatus for mixing and delivering a pumpable explosive composition and charging a borehole with same, comprising in combination:

(a) a vehicular body,

(b) a rotatable mixing drum mounted on said vehicular body,

(c) motor means for rotating said drum in clockwise and counter clockwise directions,
(d) means for charging explosive mixture ingredients into said drum,
(e) receiving means adapted to receive a mixed explosive composition from said drum,
(f) conduit means connected to an outlet in said receiving means, said conduit means containing at least one in-line static mixing means,
(g) inlet means close to said in-line mixer for the addition thereto of one or more fluid additives,
(h) pump means adapted to withdraw said mixed explosive composition from said receiving means, conduit and in-line mixer, and
(i) flexible hose means retractably mounted on a hose reel and connected downstream of said pump, conduit and in-line mixer adapted to direct said mixed, pumped explosive composition to a point of use.

4,199,263

METHOD AND APPARATUS FOR MIXING VISCOUS MATERIALS

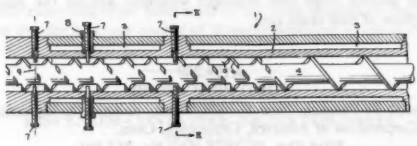
Hans G. L. Menges, Laurensberg b. Aachen; Engelbert G. Harms, Vaalserquartier b. Aachen, and Rainer Hegele, Ehningen, all of Fed. Rep. of Germany, assignors to Uniroyal AG, Aachen, Fed. Rep. of Germany

Continuation of Ser. No. 873,315, Jan. 30, 1978, abandoned, which is a division of Ser. No. 641,790, Dec. 16, 1975, abandoned, which is a continuation of Ser. No. 379,537, Jul. 16, 1973, abandoned. This application Dec. 21, 1978, Ser. No. 972,144

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1972, 2235784

Int. Cl.[2] B29B *1/06*

U.S. Cl. 366—90 **8 Claims**



1. A method for mixing and homogenizing viscous materials using a screw conveyor rotating inside a housing, said screw conveyor being an integral member having at least one substantially continuous thread flight of a constant pitch extending helically in the same direction along the longitudinal length of the conveyor for providing a substantially continuous forward feed path of stock material through the extruder, said flight providing in the feed path direction a first zone for stock material input subsequently followed by a second zone for stock material mixing and homogenizing; the thread in the first zone having uninterrupted lands and the thread in the second zone having spaces between adjacent lands of the screw thread and interrupting gaps in the lands of the screw thread, obstacle means projecting into at least one of said spaces and gaps for penetrating the stock material as the screw conveyor is substantially limited to rotational movement during the forward feed to create vortexing in the material; there being at least one full revolution of the screw thread between axially adjacent obstacle means, and means for controlling the depth of projection of the obstacle means, comprising the steps of advancing the material in a substantially continuous forward feed path through the extruder, penetrating the material with the obstacle means during the forward feed to create local votexing in the material, and varying the penetration according to criteria relating to the material.

4,199,264

UNBALANCED WEIGHT VIBRATOR

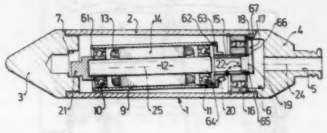
Philipp Uebel, Unterschleissheim-Lohhof, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 7, 1977, Ser. No. 858,530

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706053

Int. Cl.[2] B01F *11/00*

U.S. Cl. 366—123 **3 Claims**



1. A rotating unbalanced weight vibrator comprising a vibrator housing defining and lying on a first axis; a motor housing having two ends and being normally generally nonconcentrically arranged within the vibrator housing so as to define and lie on a second axis normally inclined relative to the first axis, the motor housing including a stator extending radially outwardly from the second axis, a drive shaft extending through the stator along the second axis, a rotor connected to the drive shaft at one of the ends of the motor housing, and a nipple coaxial with said second axis and which is connected to and circumscribed by a swivel joint coaxial with one of the axes, connecting the vibrator housing with the other end of said motor housing and precluding rotational movement of said housings relative to each other while permitting orbital movement of said one end of said motor housing about said first axis in response to rotation of said rotor, thereby providing a dead spot in which forces of bending and vibration are absent within a circumscribed portion of said nipple; and an electrical cable passed through the vibrator housing substantially through the dead spot and being connected to the stator.

4,199,265

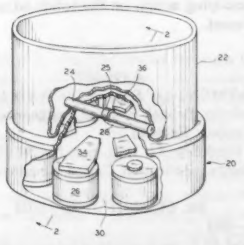
MOTORLESS MAGNETICALLY COUPLED STIRRER

Robert A. Sanderson, Northbrook, and Patrick S. Chan, Skokie, both of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 30, 1978, Ser. No. 955,970

Int. Cl.[2] B01F *13/08*

U.S. Cl. 366—274 **20 Claims**



1. A digitally controlled motorless stirrer comprising means for generating cyclically recurring pulses, electronically controlled means for establishing a stepping magnetic field responsive to said recurring pulses, a container, a magnetic stir rod positioned in said container and against a surface thereof made from a non-magnetic material, and means for supporting said surface of said container within said magnetic field in a position where said magnetic stir rod follows the stepping of said magnetic field.

4,199,266

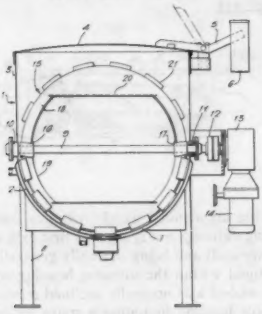
PROCESSING VESSELS

Raolo B. Giusti, 28 Allandale Ave., Finchley, London N3 3PJ, England

Continuation-in-part of Ser. No. 829,434, Aug. 31, 1977, abandoned. This application Jan. 26, 1979, Ser. No. 6,890

Int. Cl.[2] B01F 7/04

U.S. Cl. 366—296 7 Claims



1. A processing vessel for mixing a liquid containing solid pieces, comprising:

a container for receiving the material to be processed, said container having a top opening and a hemispherical bottom portion;

a non-vertical agitator drive shaft extending into the container;

motor means for rotating said agitator drive shaft; and

agitator means disposed on said drive shaft for engaging and scraping the surface of the hemispherical bottom portion of said container;

said agitator means being substantially circular in form and comprising a pair of substantially semicircular annular blades extending around a frusto-conical surface having an axis which extends radially of said agitator drive shaft and passes through the centre of the circle;

said semicircular annular agitator blades providing a continuous surface area on which solid pieces adjacent the bottom of the vessel are picked up and elevated to the upper part of the vessel where they are discharged;

said frusto-conical shape of each blade causing the surface of the blade to be inclined to the vertical as it passes through its lowermost position so that the blade exerts a relatively gentle scooping action on the solids adjacent the bottom of the vessel.

4,199,267

TREATMENT OF SLURRIES AND LIQUIDS

John M. Hendrikz, Bristol, England, assignor to Imperial Group Limited, London, England

Filed Sep. 12, 1978, Ser. No. 941,789

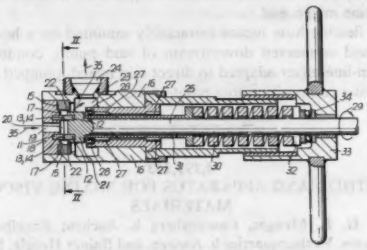
Claims priority, application United Kingdom, Sep. 20, 1977, 39039/77

Int. Cl.[2] B01F 5/00, 15/00

U.S. Cl. 366—302 7 Claims

1. A method of homogenizing a tobacco slurry containing solid abrasives comprising rotating first and second coaxial rings of a hard material having facing parallel flat annular surfaces relative to one another about their common axis; pressing the annular surfaces of the first and second coaxial rings resiliently one against the other so that the two faces are worked together to a very close fit and are self lapping; passing the slurry containing abrasives radially outwards under very high pressure of the order of 280 kg/cm^3 between the facing surfaces of the two closely adjacent and rotating coaxial rings; and causing the slurry to impinge violently against a surface spaced from, surrounding and coaxial with said rings.

2. A homogenizing apparatus for a slurry containing solid abrasive materials comprising first and second coaxial rings having facing parallel flat annular surfaces, means for resiliently pressing said rings together so that the facing surfaces come into contact, a third ring surrounding and spaced from the first and second rings, the inside surface of the third ring together with the outside surfaces of said first and second rings defining an annular space, means for causing relative rotation between the first and second rings about their common axis whereby the facing surfaces of said first and second rings



become self lapping so as to work said facing surfaces together to a very close fit, and means for supplying the slurry containing abrasive to be homogenized under pressure axially through the bore of said first ring, the bore of said second ring being closed, whereby fluid entering under pressure through the bore of said first ring is forced radially outwards between the facing surfaces of said first and second rings and the rotary action of the first and second rings with the abrasive containing slurry passing therethrough promotes self lapping and prevents the formation of erosion channels and pitting in the rings and the slurry containing abrasive passes outward between the first and second rings and impinges violently against the inside surface of said third ring.

4,199,268

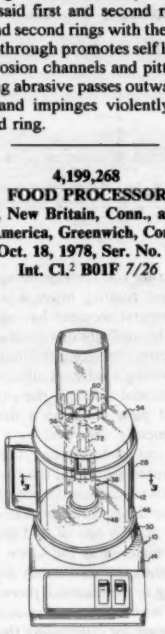
FOOD PROCESSOR

Joseph F. Parzych, New Britain, Conn., assignor to Dynamics Corporation of America, Greenwich, Conn.

Filed Oct. 18, 1978, Ser. No. 952,381

Int. Cl.[2] B01F 7/26

U.S. Cl. 366—306 9 Claims



1. The method of whipping cream comprising rotating a horizontal flat surface upon which gravity initially supports flowable cream,

marginally retarding rotational movement of the flowable cream by a stationary vertical cylindrical surface at the periphery of the flat surface,

centrifugally driving and progressively propelling the supported cream horizontally in the stationary cylindrical vertical surface at an acute angle against a vertical stationary flat surface above and disposed chordal and normal to the rotating surface in close proximity thereto at the intersection of their planes to repeatedly agitate the cream and move the agitated cream progressively in a chordal direction towards the center of rotation to clear the radially outer portions of the flat surface, and thereby reducing the degree of centrifugal force effective on the cream to a smaller radius, and repeatedly centrifugating the cream and moving it from said smaller radius in rotationally outwardly spreading arcs into repeated violent contacts with the stationary flat surface in relation to fluidity at a rotational speed above a thousand R.P.M.

4,199,269

SPIRAL MIXING ELEMENT

Jürgen Neumann, Liederbach, and Peter Gumm, Glashutten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,340

Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723727

Int. Cl.[2] B01F *7/08*

U.S. Cl. 366—343 **13 Claims**

1. A device for mixing and/or conveying, comprising an elongated member which is rotatable about its longitudinal axis, said member comprising a T-shaped lateral cross-section which has been spirally twisted about said longitudinal axis, whereby at least two portions of the T cross-section comprise helically extending mixing and/or conveying elements, said two portions of the T cross-section comprising the two cross-webs extending from both sides of the base portion of the T, and the pitch of one course of thread amounting to up to 220 mm.

4,199,270

DISPENSER-CONTAINER BRUSH FOR PASTE MATERIAL

Gianni Tomasini, Milan, Italy, assignor to Secunda AG fur Vermietung Von Wirtschaftsgutern, Bremgarten, Switzerland

Filed Apr. 18, 1978, Ser. No. 897,568

Claims priority, application Italy, Apr. 27, 1977, 22877 A/77

Int. Cl.[2] A46B *11/02*

U.S. Cl. 401—183 **8 Claims**

1. A brush assembly comprising:

a generally tubular dispenser container for paste material;

a substantially rigid bristle holder head member having a bristle arrangement on an outer face and having an internal cavity opening through an end thereof:

an elongated stem extending from one end of said container and having a hollow interior communicating with the interior of said container;

a dispensing opening in a side of said stem remote from said container, and a vent opening in said stem adjacent said container, the shape and size of said stem corresponding to the shape and size of said internal cavity;

a dispensing hole extending from said internal cavity to the outer suface of said bristle holder amid said bristles, said dispensing hole being so located that it can be brought into and out of register with said dispensing opening when said stem is nested in said internal cavity;

the other end of said container defining a charging opening; and

a closure for said charging opening having holding means engaging one of the inner and outer surfaces of said container and a skirt spaced from said holding means and

engaging the other of said surfaces, said vent opening serving to vent air from said container during charging.

4,199,271

DEVICE FOR SEALING V-BELT AND PULLEY IN PLATE JARRING DEVICES

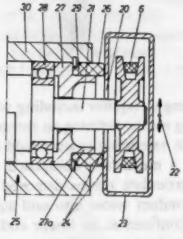
Franz Riedl, München, Fed. Rep. of Germany, assignor to Wacker Werke GmbH & Co KG, Munich, Fed. Rep. of Germany

Filed Mar. 30, 1978, Ser. No. 891,690

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 7710169[U]

Int. Cl.[2] E01C *19/38*

U.S. Cl. 404—113 **3 Claims**



1. In combination in a jarring device having a bottom plate adapted to be jarred and having a forward moving advancing direction, an unbalance oscillation generator with a generator housing therefor having a shaft and being firmly connected to said bottom plate, an applied load, a drive motor having a motor shaft and mounted on said applied load, a belt drive drivingly connecting said drive motor to said unbalance oscillation generator, said drive motor in the bottom plate forward moving advancing direction of said jarring device being offset relative to said oscillation generator and being arranged on the applied load, means for cushioning said applied load relative to said bottom plate, a protective housing surrounding said belt drive and being closed on all sides with the exception of passage means for the shafts of said drive motor and said oscillation generator respectively, said protective housing being firmly connected to at least said motor, said motor shaft extending in a dustproof manner through said passage means provided therefore in said protective housing, sealing means stationarily interposed between said motor shaft and protective

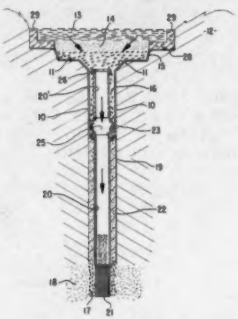
housing, said passage means for said shaft of said unbalance generator having a radial oversize with regard to said last mentioned shaft which oversize corresponds to at least the oscillation amplitude between said applied load and said bottom plate, sealing ring means surrounding said shaft of said unbalance oscillation generator outside the pertaining passage means in said protective housing for effecting a seal between said protective housing and said generator housing for said unbalance oscillation generator, said sealing ring means being firmly connected to one of said housings, said sealing ring means having one end face facing away from said one of said housings and in each phase of the relative oscillatory movement of said unbalance oscillation generator engaging a plane annular sealing surface substantially vertical with regard to said shaft of said unbalance oscillation generator between said last mentioned shaft and one of said housings.

4,199,272

SYSTEM FOR RECHARGING AQUIFER AND APPARATUS THEREFOR

Edward H. Lacey, P.O. Box 796, Trent, S. Dak. 57065

Filed Apr. 19, 1978, Ser. No. 898,392
Int. Cl.² E02B *11/00*
U.S. Cl. 405—36 **6 Claims**



1. For recharging an aquifer including water bearing sand, a system comprising means defining an entrance into said aquifer including a trench extending toward said aquifer, said trench being lined with a membrane composed of relatively water tight material, particulate means disposed within said trench and adapted to conduct water into said aquifer, said entrance being relatively confined at its lower end at the aquifer and having a broadened upper end upon which water can be placed, and curb means defining said broadened upper end and adapted to confine the water therebetween.

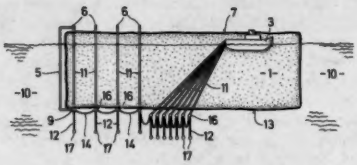
4,199,273

DISCONTINUOUS PANELS FOR PROTECTING THE LOWER SURFACE OF A TABULAR ICEBERG AND METHOD OF INSTALLING SAME

Georges L. Mougins, Paris, France, assignor to ITI Limited, Paris, France

Filed Apr. 3, 1978, Ser. No. 893,072
Claims priority, application France, Apr. 14, 1977, 77 11278
Int. Cl.² E02B *1/00*
U.S. Cl. 405—52 **11 Claims**

1. A set of discontinuous panels for protecting the horizontal lower surface of a floating iceberg, wherein the panels are parallel to one another and are spaced apart extending across said horizontal lower surface from edge to edge, said panels being held below said lower surface by arms or cables attached to anchor points on the upper surface of the iceberg and by gas-filled chambers attached along the upper edges of the



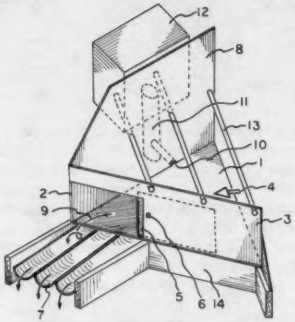
panels, with such panels stretched by ballast weights attached to their lower edges.

4,199,274

FLOW MEASURING FLUME OF ADJUSTABLE CAPACITY

John L. Loth, P.O. Box 4094, Morgantown, W. Va. 46505

Filed Apr. 7, 1978, Ser. No. 894,239
Int. Cl.² E02B *7/26*
U.S. Cl. 405—103 **9 Claims**



1. A flow metering flume of adjustable capacity comprising a horizontal triangular base; two vertical side walls each attached to one of the sides of said horizontal triangular base, said side walls being joined together at one corner of said triangular base, one of said vertical side walls having an opening which is flush with said horizontal triangular base and begins at said one corner of said horizontal triangular base and extends a predetermined distance along said one vertical side wall, the flow through said flume entering the open side of said horizontal triangular base and discharging through said opening; and a sliding door for adjusting the width of said opening without altering the geometry of said flume to thereby maintain the same discharge characteristic per unit width of said opening.

4,199,275

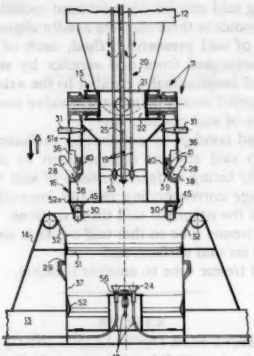
ARTICULATED COLUMN FOR THE EXPLOITATION OF MARINE BOTTOM RESOURCES, COMPRISING PIPINGS CONNECTABLE BETWEEN THE COLUMN AND ITS BASE

Samuel Tuson, Mesnil-le-Roi, France, assignor to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H., France

Filed Jun. 23, 1978, Ser. No. 918,687
Claims priority, application France, Jul. 1, 1977, 77 20391
Int. Cl.² E02B *1/00, 17/00*
U.S. Cl. 405—195 **9 Claims**

1. A device for coupling and uncoupling an emerging articulated column to or from its base installed on the bottom of a body of water, said column and said base each being provided

with piping portions, wherein said piping portions of said column include a bundle of bending rigid pipes extending in substantially parallel relationship to the axis of said column and wherein the foot of the said column is provided with a substantially cylindrical connecting pedestal connected to the said column through an articulation such as a universal joint or a Cardan joint having a cross piece and adapted to be locked on said base, wherein the cross piece of said universal or Cardan joint has an opening formed centrally therethrough, through which opening said pipe bundle passes, said base being provided with a socket ring into which said connecting pedestal is adapted to be fitted and said column and pedestal being provided with mutually cooperating means for angular positioning said pedestal with respect to the said socket ring to a predetermined position and with mutually cooperating means for automatically locking and unlocking said socket ring to said connecting pedestal including several pivoting latch members retractable into lateral recesses provided in the said connecting pedestal and several corresponding engaging cavities provided in the internal wall of the said socket ring.



4,199,276

OFFSHORE LIFT PLATFORM

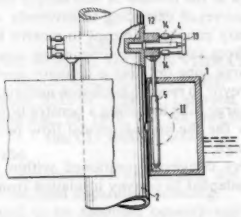
Hans-Günther Molsberger, Hamburg, Fed. Rep. of Germany, assignor to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Kiel, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,405

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736938

Int. Cl.² E02B *17/08*

U.S. Cl. 405—198 **8 Claims**



1. An offshore structure comprising:

(a) a platform;

(b) a plurality of elongated support legs, each having a plurality of sockets arranged at spaced intervals substantially in horizontal and vertical rows;

(c) a plurality of first latches mounted on said platform, arranged about each support leg and adapted to releasably engage a horizontal row of said sockets in the associated support leg;

(d) a plurality of second latches arranged about each support leg, and adapted to releasably engage a horizontal row of said sockets in the associated support leg spaced from the horizontal row of sockets engaged by said first latches;

(e) means for engaging and disengaging each of said first and second latches to and from horizontal rows of sockets and means for moving each of said second latches along the respective support leg towards and away from the respective first latch, whereby each of said second latches may be caused to disengage a socket, move along the respective support leg and engage a further socket in the respective vertical row of sockets and each of said first latches may be caused to disengage a socket, move along the respective support leg and engage a further socket in the respective vertical row of sockets to advance said platform with respect to said support legs; and

(f) means interconnecting said plurality of second latches about each support leg and spaced from said platform, said interconnecting means comprising a plurality of segments, each mounted on one of said second latches and means pivotally connecting adjacent of said segments; whereby said latches are uniformly loaded when engaging a horizontal row of sockets in said support leg.

4,199,277

PILING

Stanley Merjan, 16 Beacon Dr., Port Washington, N.Y. 11050

Continuation of Ser. No. 745,405, Nov. 26, 1976, Pat. No. 4,132,082, which is a division of Ser. No. 601,728, May 4, 1975, abandoned, said Ser. No. 601,728, is a division of Ser. No. 303,706, Nov. 6, 1972, Pat. No. 3,913,337, which is a continuation-in-part of Ser. No. 256,163, May 23, 1972, Pat. No. 3,875,752, and Ser. No. 235,790, Mar. 17, 1972, Pat. No. 3,751,931, said Ser. No. 235,790, is a continuation-in-part of Ser. No. 97,997, Dec. 4, 1970, abandoned. This application Nov. 13, 1978, Ser. No. 959,630

The portion of the term of this patent subsequent to Jan. 2, 1995, has been disclaimed.

Int. Cl.² E02D *5/30, 5/48, 5/50*

U.S. Cl. 405—251 **5 Claims**

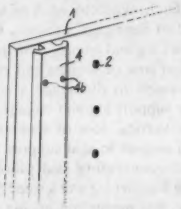
1. A tip for a pile having a tubular metal stem, which stem is filled with concrete after the pile is driven, said tip being of reinforced concrete and having an upper central cavity adapted to receive said filling of concrete, said tip being tapered to increase in diameter from the bottom upwards, the maximum cross-sectional area of the tip being about 5 to 15 times the cross-sectional area of the stem, the taper being less than about 3 inches per foot and the axial height of said tip being at least about 2 feet, and in which said tip has an upper central tubular liner rigidly embedded in the concrete of said tip and to which the stem is adapted to be attached before said pile is driven, the construction and arrangement of said tip being such that said concrete filling of said stem and central cavity constitutes an integral concrete structure having substantially the same cross-section in said cavity as in said stem.

4,199,278

INTERLOCKING MEMBERS FOR EXCAVATION LINERS

Jean-Marie G. R. Koehl, 3, rue Varengue, 92340 Bourg-la-Reine, France

Filed Jun. 9, 1978, Ser. No. 914,032
Claims priority, application France, Jun. 10, 1977, 77 17908
Int. Cl.[2] E02D *17/08*
U.S. Cl. 405—282 **51 Claims**



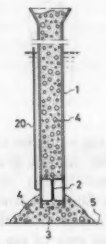
1. Means for connecting the interior surface of an excavation wall liner with at least one support member, said means comprising a first elongated profiled member forming at least one slide mounted on said interior surface, said slide being oriented in a favored direction parallel to the plane of said interior surface, and a second elongated profiled member having a projecting edge engageable in said slide of said first profiled member for preventing displacement of said second profiled member in any direction other than said favored direction, wherein said first profiled member mounted on said interior surface has an end disposed proximate an edge of said liner, and said second profiled member has an end overlapping the edge of said liner.

4,199,279

METHOD AND APPARATUS FOR PLACING CONCRETE UNDER WATER

Akio Himeji, Machida; Tadahiko Okumura, Higashikurume, and Yasuo Kajioka, Tokyo, all of Japan, assignors to The Shimizu Construction Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,339
Claims priority, application Japan, Mar. 25, 1977, 52-33061; Jun. 18, 1977, 52-72537; Oct. 27, 1977, 52-128986
Int. Cl.[2] E02D *15/06*
U.S. Cl. 405—303 **5 Claims**



1. A method for placing concrete under water, comprising the steps of:

immersing into water a substantially rigid tremie tube having a conduit for the passage of concrete from an inlet to an outlet and having an elastic valve member disposed adjacent said outlet and forming a portion of said conduit, said valve member having the same cross-sectional configuration as said conduit when said valve member is in an opened condition, and said valve member being in said opened condition during said immersing step;

transferring a predetermined quantity of concrete through said conduit from said inlet to said outlet and to an underwater surface adjacent said outlet;

closing said valve member while said outlet remains immersed in concrete deposited on said surface;

said closing step comprising the steps of:

conducting pressurized fluid from an external source to an annular compartment surrounding and concentric with said elastic valve member;

expanding said annular compartment radially inward into said conduit in three discrete axially aligned sections by means of said pressurized fluid, each of said sections being separated from one another by support means oriented longitudinally parallel to the axis of said tube, said support means securing said valve member to inner surfaces of said conduit; and

sealing said conduit by conducting sufficient pressurized fluid to said annular compartment to cause radially inwardly facing surfaces on each of said three sections to engage corresponding radially inwardly facing surfaces of the others of said three sections;

raising said tremie tube so that said outlet is above concrete deposited on said surface; and

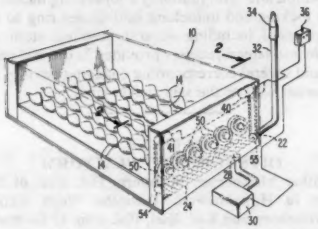
moving said tremie tube to another location.

4,199,280

EQUIPMENT FOR INSTALLING INSULATION

Lee R. Allen, Applegarth Rd., Hightstown, N.J. 08520

Filed Jul. 21, 1978, Ser. No. 927,247
Int. Cl.[2] B65G *53/48*
U.S. Cl. 406—56 **8 Claims**



1. Equipment for blowing loose insulation or the like into desired locations comprising:

(a) a supply bin for holding therein the insulation material to be delivered;

(b) a primary conveying means occupying substantially the entire area at the bottom of said supply bin;

(c) a feed conveyor extending transversely with respect to said primary conveying means to receive loose insulation material from said primary conveying means;

(d) a discharge tube defining a delivery inlet adjacent said feed conveyor to receive insulation material therethrough, said discharge tube including a constriction means therein to narrow the the cross-sectional flow path of insulation therethrough;

(e) a delivery conveyor positioned within said discharge tube and adapted to convey insulation from said delivery inlet;

(f) a distributing hose connected to said delivery conveyor to receive insulation therefrom for blowing into desired locations;

(g) air blower means connected to said discharge tube downstream of said constriction means to supply pressurized air thereto to cause blowing of the insulation through said distributing hose; and

(h) control means remotely locateable near said distributing

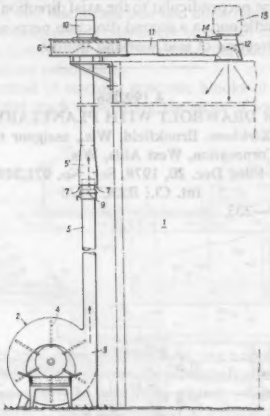
hose to selectively control the actuation of said primary conveying means, said feed conveyor means, said delivery means, and said air blower means.

4,199,281

SILO INSTALLATION

Johann Wolf, Scharnstein, Austria, assignor to Johann Wolf Gesellschaft m.b.H. KG., Scharnstein, Austria

Filed Jul. 18, 1978, Ser. No. 925,687
Claims priority, application Austria, Jul. 20, 1977, 5249/77
Int. Cl.² B65G *53/08*
U.S. Cl. 406—93 **7 Claims**



1. A silo installation comprising a tower silo, a lower fan having an intake passage and an upwardly directed delivery passage, means for supplying bulk material to the intake passage of said lower fan, an upper fan mounted above the lower fan on a level near the top level of said tower silo and having an upwardly directed intake passage and a delivery passage, a substantially vertical pipeline connecting said delivery passage of said lower fan to said intake passage of said upper fan, a rotary distributor unit connected to said delivery passage of said upper fan and adapted to receive bulk material from said delivery passage of said upper fan and to distribute said bulk material in said tower silo, said rotary distributor unit being connected to the delivery passage of said upper fan by a horizontal delivery conduit and being mounted at the end of said delivery conduit opposite to said upper fan and said rotary distributor unit comprising a rotary distributor for distributing said bulk material in said tower silo and a cyclone having an air outlet opening and provided with means for adjusting the area of said air outlet opening.

4,199,282

UNLOADING SYSTEM HAVING VIBRATORY BIN DISCHARGE STRUCTURE

Ronald D. Johnson, 3516 W. 97th Pl., Leawood, Kans. 66208

Filed Apr. 19, 1978, Ser. No. 897,599
Int. Cl.² B65G *53/38*
U.S. Cl. 406—136 **2 Claims**

1. Pneumatic apparatus for discharging dry bulk material from a storage bin, said apparatus including:

a duct adapted to be mounted beneath said bin in sealed communication with the interior of the latter for receiving bulk material therefrom under the influence of gravity,

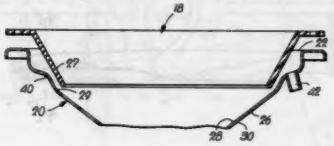
said duct being provided with a frusto-conical, peripheral wall having an interior and an exterior surface,

said duct having an inlet adjacent said bin and an outlet spaced therebelow;

a material-receiving, tubular, flexible, frusto-conical member secured to the bin within said duct and having a peripheral segment normally engaging a portion of the interior surface of said wall,

said member having a lowermost open end within the duct,

a gas port in said wall intermediate said inlet and said portion and adapted to be coupled with a selectively operable source of pressurized gas for vibrating said member and for aerating said material, to thereby initiate and sustain material flow from the bin through the duct; and



raised structure formed in said portion of said interior surface for supporting the member in a manner to favorably dispose said segment for sealing with said portion, and for enhancing the vibratory action of the member,

said portion of the interior surface of the wall having an undulated section between said port and said open end of the member presenting said structure,

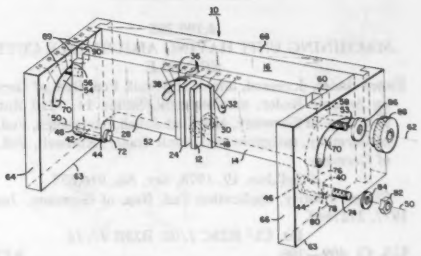
the member being deformable to the configuration of said interior surface by the weight of the material within the duct.

4,199,283

DRILL JIG

LaRelle T. Perry, 171B Crescent St., Shrewsbury, Mass. 01545

Filed Sep. 25, 1978, Ser. No. 945,202
Int. Cl.² B23B *49/00*
U.S. Cl. 408—115 R **6 Claims**



1. A drill jig for guiding drill bits for boring holes in a surface at any preselected compound angle comprising

a frame having a pair of opposed substantially parallel end pieces substantially perpendicular to a back piece interconnecting said end pieces, at least said end pieces having bottom surfaces defining a bottom plane for seating upon said surface,

a support member,

means for pivotally mounting opposite ends of said support member to respective ones of said end pieces to allow said support member to pivotally move over an arcuate path about a first axis substantially parallel to said bottom plane,

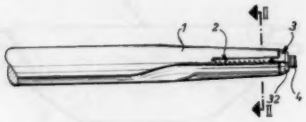
guide means for guiding a drill bit along a second axis, and

means for pivotally mounting said guide means to said support member to allow said guide means to pivotally move over an arcuate path about a third axis substantially normal to said first axis and said second axis.

4,199,284
CONICAL REAMER

Dieter Kress, Aalen, and Friedrich Häberle, Lauchheim, both of Fed. Rep. of Germany, assignors to Mapal Fabrik fur Prazisionswerkzeuge Dr. Kress KG, Aalen, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,745
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722794
Int. Cl.[2] B23B *51/00;* B26D *1/12*
U.S. Cl. 408—233 6 Claims

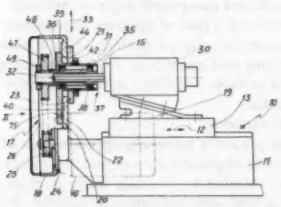


1. A conical reamer comprising:
(a) an elongated, longitudinally tapering head formed with a plurality of longitudinal flutes;
(b) means for rotating said head about a longitudinal axis, said head being formed with an axially elongated groove contiguously adjacent each flute, each groove being open in a forward axial direction and closed in a rearward axial direction;
(c) an axially elongated cutting blade received in each groove, a portion of each blade including a cutting edge terminating at a blade face exposed in the adjacent flute,
(1) said blade having a frontal end face diverging obliquely from a plane perpendicular to the direction of blade elongation at a first, acute angle in a radial direction toward said axis, and at a second acute angle in a circumferential direction relative to said axis;
(d) a clamping member having an abutment face conforming with said end face of said blade and arranged in area contact therewith to hold said blade within said groove; and
(e) clamping means on said head urging said abutment face axially rearward and against said end face of said blade.

4,199,285
MACHINING UNIT HAVING ADJUSTABLE CUTTER SPINDLE

Eugen Bader, deceased, late of Rottweil, Fed. Rep. of Germany; by Antonie Bader, administratix, Saline 14, 7210 Rottweil, Fed. Rep. of Germany, and Kurt Jauch, Metzingen, Fed. Rep. of Germany, assignors to Antonie Bader, Rottweil, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 916,677
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 2727645
Int. Cl.[2] B23C *1/02;* B23B *47/16*
U.S. Cl. 409—206 9 Claims

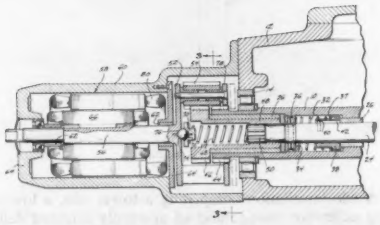


1. A machining unit comprising in combination a saddle carrier;
a saddle slideably guided on said saddle carrier;
a spindle unit supported on said saddle, said spindle unit including a working spindle, said saddle being slideable axially of said working spindle for feed motions of the latter;
a drive motor secured to said saddle carrier;
a transmission including an input member driven by said drive motor and a hollow output shaft extending around an end portion of said working spindle;
means coupling said output shaft with said working spindle end portion to facilitate guided axial sliding movement thereof and to impart rotation to said working spindle;
characterized in that said machining unit further includes a holder member holding said hollow output shaft with releasable lock-and-adjustment means for selectively locating said holder member and said output shaft in a first direction perpendicular to the axial direction of said working spindle and in a second direction perpendicular to the axial direction of said working spindle.

4,199,286
POWER DRAWBOLT WITH PLANETARY DRIVE

Edward E. Kirkham, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Dec. 20, 1978, Ser. No. 971,349
Int. Cl.[2] B23C *5/26*
U.S. Cl. 409—233 10 Claims



1. In a machine tool having a hollow cylindrical spindle;
a socket on the front end of the spindle for receiving a toolholder;
a drawbolt rotatably mounted within said spindle and having a threaded front end adjacent to said socket for engaging a threaded hole in said toolholder to secure the toolholder within the socket;
the improvement comprising a first spur gear attached to the rear end of said spindle;
a second spur gear attached to the rear end of said drawbolt, said first and second spur gears having the same diameter but having a differing number of teeth and said first and second spur gears being positioned in side by side relationship;
a planetary gear cage carrying at least one pinion gear which is meshed with both said first and second spur gears;
a motor having a housing and having an armature rotatably mounted within said housing on an armature shaft; and
said planetary gear cage being coupled to said armature shaft to be rotated thereby and thus to cause rotation of said drawbolt at a reduced speed.

4,199,287
METHOD AND APPARATUS FOR STACKING BLOCK-LIKE ARTICLES

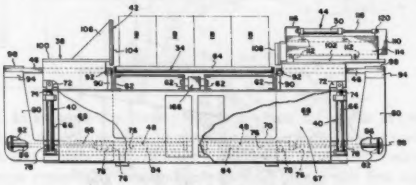
Thomas R. Salts, Roanoke, Ill., assignor to Besser Industries, Inc., Roanoke, Ill.

Filed Jun. 12, 1978, Ser. No. 914,986
Int. Cl.[2] B65G *57/30*
U.S. Cl. 414—68 9 Claims

4. Apparatus for assembling a multi-tier stack of concrete blocks or like articles comprising feed means for feeding individual tiers of blocks in succession to a work station, clamp

means mounted at opposed sides of said work station operable to releasably clamp a tier of blocks from two opposite sides of said tier with a clamping grip sufficient to support a multi-tier stack of blocks in an elevated position by application of said clamping grip to two opposed sides of the lowermost tier of said stack, lift means operable to cyclically raise and lower said clamp means while cyclically operating said clamp means to clamp and to release tiers of blocks to elevate a tier of blocks from said work station to accommodate the feeding of a successive tier of blocks to said work station and then lowering the elevated tier onto stacked relationship with the successive tier, auxiliary tine means on said lift means movable to and from spaced underlying relationship with a tier of blocks clampingly gripped by said clamp means, and actuating means for projecting said tine means into said underlying relationship prior to and during raising movement of said lift means and for withdrawing said tine means before lowering said elevated tier onto said stacked relationship.

8. The method of stacking concrete blocks or like articles into a multi-tier stack comprising the steps of locating a first



tier of blocks upon a work station, applying a compressive grip to said first tier from two opposite sides thereof, elevating said first tier vertically from said work station while maintaining said compressive grip on said first tier to a height accommodating the location of a second tier of blocks on said work station, locating a second tier on said work station in underlying relationship to the elevated first tier, lowering the compressively gripped first tier until said first tier is supported on said second tier, releasing the compressive grip from said first tier and applying the compressive grip to opposed sides of said second tier, elevating the compressively gripped second tier with said first tier supported thereon vertically from said work station to a height accommodating the location of a third tier of blocks on said work station in underlying relationship to the elevated first and second tiers, cyclically repeating the locating, gripping and elevating steps until the final tier of the multi-tier stack is located on said work station and has been compressively gripped to square up the final tier, interrupting the cyclic repetition of the locating, gripping and elevating steps at that point, releasing the compressive grip on said final tier, and moving the multi-tier stack clear of said table.

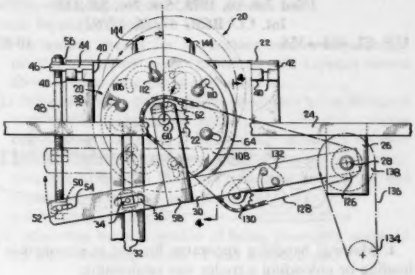
4,199,288

INFINITELY VARIABLE SPACING FEEDER

Robert H. Ganz, Saddle River, and Frank Conley, Bergenfield, both of N.J., assignors to Ganz Brothers, Inc., Bergenfield, N.J.

Filed Jul. 25, 1977, Ser. No. 811,980
Int. Cl.[2] B65G *47/90*
U.S. Cl. 414—128 **15 Claims**

1. An infinitely variable spacing feeder comprising a carrier, means mounting said carrier for 360° rotation about an axia, a plurality of support elements, a feed member carried by each support element, support means carried by said carrier mounting said support elements on said carrier in uniformly spaced circumferential relation about said axis, and adjusting means carried by said carrier for adjusting said support means for adjusting the positions of said support elements radially of said axis and thereby varying the spacing between adjacent feed members, said support means including for each of said support elements a crank element, means mounting each support element on its respective crank element, means individually pivotally mounting each crank element on said carrier for facilitating movement of each support element towards and away from



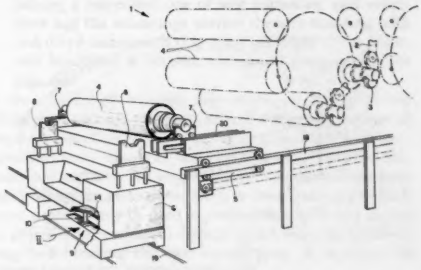
said axis, and said adjusting means being connected to each crank element for positioning said crank elements.

4,199,289

POSITIONING APPARATUS FOR ROLLER-TRANSPORT CART

Stephan Segbert, Bahnhofstrasse 47, Heek D-4431, and Josef Segbert, Ahaus, both of Fed. Rep. of Germany, assignors to Stephan Segbert, Heek, Fed. Rep. of Germany

Filed Aug. 2, 1978, Ser. No. 930,190
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734878
Int. Cl.[2] B65G *67/02*
U.S. Cl. 414—347 **6 Claims**



1. A system comprising:

a carriage displaceable along a path into and out of a transfer station on said path;

means for passing an object to be transported by said carriage thereto in an exact location at said station;

a positioning screw at said station having a longitudinal axis extending generally parallel to said path at said station and formed with a pair of screw formations of opposite hand axially spaced from each other and having oppositely directed outer ends and confronting inner ends spaced apart by a predetermined distance;

an entrainment element on said carriage engageable with said screw formations and having a dimension measured parallel to said axis equal to at most said distance; and

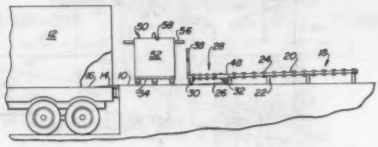
means for rotating said screw about its said axis in a rotational sense to displace said carriage when said element is engaging either of said formations into a position with said element between said inner ends and said carriage exactly aligned at said location.

4,199,290

MATERIAL HANDLING APPARATUS

Charles E. Jacoby, Bethlehem, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Jul. 10, 1978, Ser. No. 923,115
Int. Cl.[2] B65G *67/36, 67/02*
U.S. Cl. 414—354 **10 Claims**



1. Material handling apparatus for use in connection with loading or unloading a trailer van comprising:

(a) a wheeled vehicle having a load supporting bed, said vehicle being of a size so that it may enter a trailer van,

(b) a conveyor frame supporting rollers in a manner so that the rollers form a load support surface which slopes at an acute angle less than 3°,

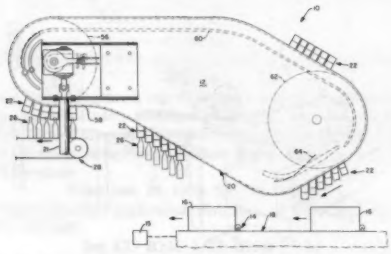
(c) a platform at one end of said frame and arranged with a sloping surface below the elevation of said one end of said frame so that said bed top surface is aligned with said load supporting surface when at least one pair of wheels of the vehicle is on said platform.

4,199,291

VELOCITY COMPENSATOR ASSEMBLY IN A HORIZONTAL ARTICLE CONVEYOR SYSTEM

Michael E. Winiasz, and James M. Long, both of Lorain, Ohio, assignors to A-T-O Inc., Willoughby, Ohio

Filed Apr. 12, 1978, Ser. No. 895,815
Int. Cl.[2] B65B *21/02, 69/00;* **B65G** *65/02*
U.S. Cl. 414—416 **15 Claims**



1. In article unpacking apparatus including a frame, a driven conveyor for moving cases through a fixed course having a horizontal section, and a driven conveyor means having a fixed orbit in a vertical plane above said conveyor horizontal section, article gripper means, and carrier bars for said article gripper means operatively connected to and movable with said conveyor means, said article gripper means depending from said carrier bars in fixed angular relation thereto in a lower reach of said conveyor means orbit, the improvement comprising a pair of control arms for each said carrier bar, said control arms being individually fixedly secured to different ends of a said carrier bar and extending therefrom in different directions at similar obtuse angles to the path of movement of said carrier bar and defining planes perpendicular to said carrier bar's longitudinal axis,

said driven conveyor means having a course extending downwardly towards said horizontal section at an acute angle thereto and then upwardly from an inflection area at an acute angle thereto, said inflection area being at the area of engagement of a gripper means with an article in a case on said driven conveyor, and

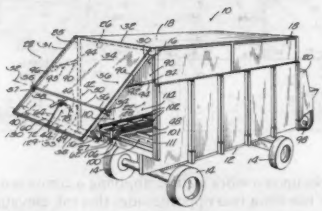
guide means on said frame at only said downwardly and upwardly directed courses of said driven conveyor means, said guide means having one section to engage one of said control arms as its said gripper carrier bar is descending towards said inflection area and having a second section to engage the other of said control arms as its carrier bar moves from said inflection area upwardly whereby said gripper means can be maintained in vertical positions as they move to and from said inflection area, said one guide section terminating after said other of said control arms engages said second guide section.

4,199,292

FORAGE WAGON REAR WALL CONSTRUCTION

John E. Kasten, 136 Concord La., West Bend, Wis. 53095

Filed Aug. 23, 1978, Ser. No. 935,998
Int. Cl.[2] B60P *1/36*
U.S. Cl. 414—519 **17 Claims**



1. A forage wagon having a wheeled frame, spaced walls on said frame and enclosing an interior storage area, at least one of said walls being hingedly attached to said frame providing an access door movable between an open position permitting access into said interior storage area and a closed position blocking said access, said access door including an outside surface area facing away from said interior storage area and an inside surface area facing toward said interior storage area, and a locking mechanism for said access door comprising an outer locking member mounted along said outside surface area and rotatable relative thereto about an axis of primary rotation between an unlocked position in which said access door is freely movable between said open and closed positions and a locked position in which said access door is maintained by said outer locking member in said closed position, an outer latching member mounted outwardly of said outside surface area and rotatable relative thereto about an axis of secondary rotation extending transversely of said primary axis between a latched position and an unlatched position, an inner latching member mounted on said inside surface area and axially movable along said secondary axis between a first position and a second position, first means for maintaining said outer locking member in said locked position when said outer latching member is disposed in said latched position while permitting free movement of said outer locking member between said locked and unlocked positions when said outer latching member is disposed in said unlatched position, second means for holding said outer latching member in a close non-touching relationship relative to said outside surface area when said inner latching member is disposed in said first position and for holding said outer latching member in an outwardly spaced relationship relative to said outside surface area when said inner latching member is disposed in said second position, and whereby, when said outer latching member is in said unlatched position, said outer locking member is freely operable between said locked and unlocked positions regardless of the disposition of said inner latching member, and when said outer lachting member is in said latched position, said outer locking member is maintained in said locked position when said inner latching member is

disposed in said first position and movable to said unlocked position in response to movement of said inner latching member from said first to said second position.

4,199,293

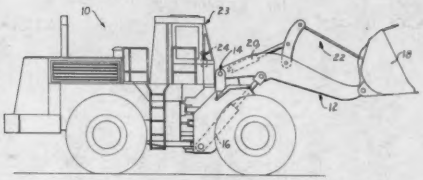
HIGH PRESSURE IMPLEMENT CIRCUIT FOR LOADER WITH SLOW AND FAST DUMP POSITION

Wayne A. Peterson, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 775,062, Mar. 7, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,345

Int. Cl.[2] F15B *13/09*

U.S. Cl. 414—699 **5 Claims**



1. In an apparatus having cylinder means actuatable in one and the other directions to move an instrument to a first position and to a second position respectively, a hydraulic control system comprising first and second fluid pumps and first and second pilot actuated control valve means operatively interconnecting the fluid pumps with said cylinder means for selectively providing a first relatively lower speed of movement of the instrument from the first position towards the second position and for selectively providing a second relatively higher speed of movement of the instrument from the first position toward the second position, the improvement comprising pilot pressure system means including a pilot valve for selectively directing pilot pressure selectively to said first and both control valves for selectively directing fluid from said first and both pumps to said cylinder means for selectively providing said first and said second speeds of movement of said instrument and wherein said pilot valve includes a valve body and a valve spool reciprocal therein, and wherein the body defines a pilot supply pressure port, a first port operatively connected with the first control valve, a second port operatively connected with the second control valve, and a tank port, and wherein the spool defines a first passage means for providing communication between the pilot supply pressure port and first port as the spool is moved in one direction to a first position relative to the body, the spool defining means for restricting communication between the first port and tank port, said means for restricting determining pressure buildup in the first port and first control valve with the spool in said first position, the spool further defining a second passage, further movement of the spool in said one direction providing blocking of the means for restricting from the tank port and providing communication of the means for restricting with the second port through the second passage, with communication between the pressure port and first port continued.

4,199,294

AUTOMATIC PRODUCTION MACHINE

Fritz Streck; Peter Paprotny, and Gerhard Bräger, all of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 28, 1977, Ser. No. 810,754

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630857

Int. Cl.[2] B65G *47/90*

U.S. Cl. 414—739 **4 Claims**

1. In an automatic production machine having a headpiece that is adapted to hold a workpiece and/or a work tool and a support for carrying the headpiece, the improvement that

(a) said headpiece and said support are self-contained units which are independent of each other,

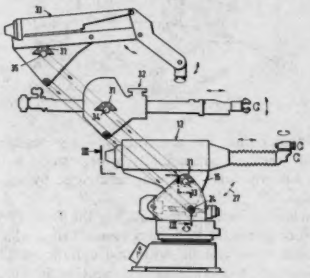
(b) said support comprises

(1) mounting means for supporting said headpiece for pivotal movement with respect to said support means about a transverse pivot axis and

(2) drive means for pivoting said headpiece when the same is pivotably supported by said support, said drive means comprising a spindle, a spindle nut arranged on said spindle for axial movement relative thereto upon rotation of said spindle, and two trunnions on said nut and extending parallel to said pivot axis,

(c) said headpiece comprises

(1) mounting means capable of being pivotably received by said mounting means of said support, and



(2) two extensions which, when said headpiece is pivotably supported by said support, extend into said support, each extension carrying a respective mounting for receiving a respective one of said trunnions, said extensions and the mountings carried thereby coacting with said drive means such that upon actuation of the latter, said headpiece is pivoted about said transverse pivot axis, and

(d) the connection between said mounting means of said headpiece and said mounting means of said support as well as the connection between said extension of said headpiece and said drive means of said support are detachable connections and form the sole structural connections between said headpiece and said support, in consequence of which said support may be used in conjunction with any one of a plurality of headpieces each of which may, by establishing and breaking the two connections, as required, be interchanged for another headpiece.

4,199,295

METHOD AND DEVICE FOR REDUCING THE NOISE OF TURBO-MACHINES

Pierre M. Raffy, Saint-Germain Laxis; Pierre A. Andre, Paris; Jean-Pierre Y. B. Girault, Dammarie les Lys; Gerhard Richter, Boissise le Roi, and Jean-Claude P. H. P. Thevenin, Saint-Maur-des-Fosses, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Nov. 7, 1977, Ser. No. 849,407

Claims priority, application France, Nov. 5, 1976, 76 34066

Int. Cl.[2] F04D *29/66*

U.S. Cl. 415—115 **10 Claims**

1. A turbo-machine which comprises:

at least one ring of circumferentially spaced, radially oriented rotor blades, the inner edges of which are attached to a rotor shaft;

a rotatable cylindrical screen positioned around said rotor blades and integrally connected to their outer edges; and

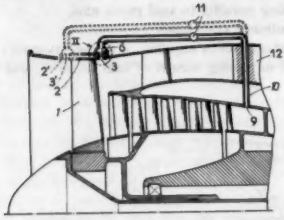
means for reducing the noise produced by the rotor blades during rotation with said cylindrical screen, said means comprising

means forming a plurality of perforations in said cylindrical screen near the peripheral edges of said rotor blades,

means for injecting pressurized fluid in the form of a jet through each of said perforations in said cylindrical screen,

means capable of modulating the flow of said fluid jets at a frequency which is a whole number multiple of the rotational frequency of said rotor shaft,

means for regulating the phase of said modulated injected



fluid such that the acoustic waves generated by said fluid flows are substantially in opposition with respect to phase to those of the noise created by said rotating blades,

said means capable of modulating the flow of said fluid jets comprising a stationary pierced ring which is configured to be coaxial with said cylindrical screen and positioned in slidable engagement with the outer periphery thereof, said ring being located between said means forming perforations in said cylindrical screen and said means for injecting pressurized fluid through each perforation such that said fluid must pass therethrough.

4,199,296

GAS TURBINE ENGINES

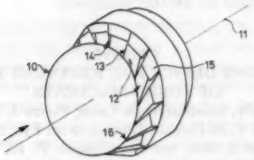
Rory S. de Chair, Hillside, Hawkesbury Road, Hillesley, Wotton-under-Edge, Gloucestershire, England

Continuation of Ser. No. 607,941, Aug. 26, 1975, abandoned. This application Jan. 9, 1978, Ser. No. 867,888

Claims priority, application United Kingdom, Sep. 3, 1974, 38380/74

Int. Cl.[2] F01D *1/02*

U.S. Cl. 415—181 **12 Claims**



1. A supersonic compressor comprising an annular array of flow passages of generally rectangular section skewed relative to the axis of the compressor and being defined between two radially spaced shrouds with circumferentially spaced apart side walls dividing the space between the said radially spaced shrouds, one of said radially spaced shrouds extending further upstream than the other, the upstream shroud defining floors for said flow passages and the downstream shroud defining roofs for said passages, the said floors and the said circumferentially spaced apart side walls extending further upstream than the said roofs and the upstream extending parts of the said floors each comprising at least a first portion inclined at a relatively shallow angle and a second portion inclined at a relatively steep angle to the axis of the compressor for producing shock compression of an incident supersonic flow received by the compressor and wherein the floors on opposite sides of any given side wall have lines of intersection with the side walls which are at different heights on said opposite sides for a substantial part of their lengths.

4,199,297

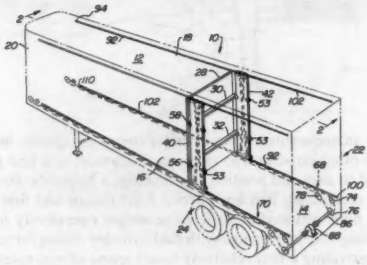
VEHICLE FOR TRANSPORTING COMPRESSIBLE MATERIALS

Andrew Abolins, Langhorne, Pa., assignor to Strick Corporation, Fort Washington, Pa.

Filed Mar. 20, 1978, Ser. No. 890,546

Int. Cl.[2] B60P *1/00*

U.S. Cl. 414—525 R **10 Claims**



1. A vehicle for transporting compressible materials comprising:

(a) an enclosure having two side walls, a top wall, a bottom wall, a loading end, and a closed end,

(b) a bulkhead positionable transversely across said enclosure and having means thereon to facilitate securing the bulkhead at various locations in said enclosure,

(c) a pair of wheeled trolleys each connected to a discrete loop arrangement for moving the trolleys longitudinally along the side walls, each loop arrangement being adjacent the intersection between a side wall and the bottom wall, said trolleys being disposed for moving opposite ends of said bulkhead toward said closed end,

(d) stabilizing means including a separate pair of cables associated with each trolley for stabilizing the trolleys in a vertical disposition, at least two discrete pulleys on each trolley in contact with each cable, each cable extending along a side wall from a location adjacent the top wall at one of said enclosure ends to a location adjacent the bottom wall at the opposite end of the enclosure,

(e) a drive unit connected to each loop arrangement for driving them in synchronization.

4,199,298

TRAILER FOR SKID MOUNTED TANKS

Rodney F. A. Webre, Jr., and Oris H. Dinger, Jr., both of Houma, La., assignors to TBW Industries, Inc., Houma, La.

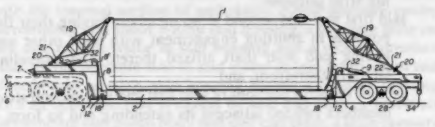
Filed Dec. 5, 1977, Ser. No. 857,272

Int. Cl.[2] B60P *3/40*

U.S. Cl. 414—458 **1 Claim**

1. In a tank trailer, a pair of trailer sections, said sections being adapted to be positioned at the respective ends of a skid mounted tank, connecting means for securing one end of one of said sections to the forward end of said tank and one end of the other section to the rearward end of said tank, means for raising each end of said tank into said connecting means and anchoring said tank and skids in traveling position, said means for raising said tank into connected position consists of fixed members extending from one end of each of said sections, hydraulic

cylinders having reciprocating rams mounted on each of said sections, cables extending from said rams to said connecting members, a sheave on one end of each of said sections over



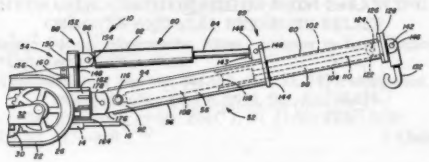
which said cable travels horizontal bars connecting the extended ends of said skids and bar receiving means, one portion of which is pivotally mounted on said connecting member and means for selectively locking said bars in raised position.

4,199,299

MATERIAL HANDLING APPARATUS FOR USE IN A MINE

Angelo S. Petitto, Sr.; Angelo A. Petitto, and James L. Petitto, all of Morgantown, W. Va., assignors to Petitto Mine Equipment Repair, Inc., Morgantown, W. Va.

Filed Jan. 9, 1978, Ser. No. 867,904
Int. Cl.² B60P 1/54
U.S. Cl. 414—687 **11 Claims**



1. A material handling vehicle for use in an underground mine comprising,

a mobile body,

a boom assembly extending from said mobile body,

said boom assembly having a first end portion adjacent said mobile body and a second end portion spaced from said first end portion and extending from said mobile body,

a pivot pin secured to said mobile body and extending upwardly therefrom,

said boom assembly first end portion being pivotally connected to said upwardly extending pivot pin,

first actuating means mounted on said mobile body and connected to said pivot pin for pivoting said boom assembly laterally relative to said mobile body,

first connecting means for securing said boom assembly first end portion to said mobile body to permit upward and downward movement of said boom assembly relative to said mobile body,

second actuating means being connected at one end to said upwardly extending pivot pin and connected at the other end to said boom assembly first end portion for raising and lowering said boom assembly to effect upward and downward movement of said boom assembly independent of the pivotal movement of said boom assembly,

material engaging means connected to the boom assembly second end portion for engaging material to be lifted and moved by said boom assembly,

said material engaging means including a hook member having an elongated shank and a hooked end portion,

a retainer pivotally connected to said boom assembly second end portion for upward and downward pivotal movement about a horizontal axis,

said retainer having a socket for rotatably receiving said hook member shank,

said hook member being supported by said retainer for rotational movement about the elongated axis of said shank,

second connecting means for connecting said retainer to said boom member second end portion,

said second connecting means being secured to said boom member second end portion,

extensible means for extending and retracting said boom assembly second end portion relative to said boom assembly first end portion, and

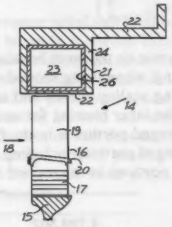
said extensible means having an end portion secured to said second connecting means.

4,199,300

SHROUD RING AEROFOIL CAPTURE

Henry Tubbs, Shirley, Nr Brailsford, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 6, 1978, Ser. No. 883,665
Claims priority, application United Kingdom, Mar. 17, 1977, 11267/77
Int. Cl.² F01D 11/08
U.S. Cl. 415—9 **7 Claims**



1. A turbine for use in a hot gas stream of a gas turbine engine, said turbine comprising:

a rotary stage having an annular array of aerofoil blades; and an annular shroud member disposed around and coaxial with said annular array of aerofoil blades, said annular shroud member having a hollow sealed interior containing a heat transfer medium therein which during turbine operation includes a condensable vapour and a liquid, capillary means positioned within the hollow sealed interior of said shroud member, said capillary means during operation of said turbine causing transport of said liquid from a cooler area to a hotter area of said shroud member where said liquid becomes the condensable vapour, said condensable vapour being transferred from the hotter area to the cooler area of said shroud member by a vapour pressure gradient between said hotter area and sid cooler area, said condensable vapour being condensed into said liquid in the cooler area, and said shroud member being provided with a wall adjacent said annular array of aerofoil blades capable of being penetrated by a detached aerofoil blade or a blade portion, said wall being dimensioned so that any such detached blade or blade portion which penetrates said wall enters said hollow interior of said shroud member and is retained therein.

4,199,301

HOUSING FOR THERMAL APPARATUS AND FLUID FLOW MACHINES PARTICULARLY A STEAM TURBINE

Pierre Meylan, Neuenhof, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jul. 22, 1977, Ser. No. 818,333
Claims priority, application Switzerland, Aug. 13, 1976, 10318/76
Int. Cl.² F01D 25/24
U.S. Cl. 415—201 **4 Claims**

1. A turbine housing comprising:

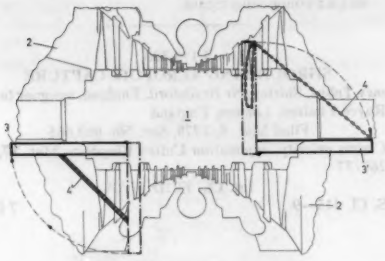
an outer housing;

an inner housing positioned within the outer housing;

means for supplying working fluid to the interior of said

inner housing and for discharging working fluid therefrom;

horizontally hinged portions on each of the inner and outer housings, each portion having a first vertical position in which the portion forms an integral part of the corresponding housing and being movable to a second horizontal position for use as a working platform;



the hinged portion on the inner housing opening towards the outer housing when being moved to the second position and including sealing means and securing means on the outside of the inner housing for sealing the inner housing when the hinged portion is in the first position; and

each of the hinged portions including means for maintaining each of the portions in the second horizontal position.

4,199,302

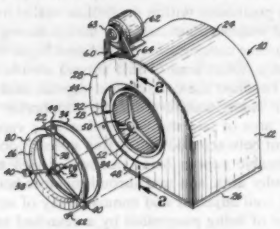
CENTRIFUGAL BLOWER HAVING IMPROVED STRUCTURE FOR MOUNTING OF ROTOR ASSEMBLY

Adam D. Goetti, 4960 E. Palomino Dr., Phoenix, Ariz. 85018

Division of Ser. No. 749,675, Dec. 13, 1976, which is a continuation-in-part of Ser. No. 639,521, Dec. 10, 1975, abandoned. This application Jan. 19, 1979, Ser. No. 4,928

Int. Cl.[2] F04D *29/42*

U.S. Cl. 415—201 **8 Claims**



1. A centrifugal blower assembly comprising:

(a) a blower housing having a side wall in which an air inlet opening is formed;

(b) a rotor support brace attached to the side wall of said blower housing so as to span the air inlet opening formed therein;

(c) a stub shaft mounted on said rotor support brace and extending therefrom coaxially through the air inlet opening formed in the side wall of said blower housing and into the interior thereof;

(d) a rotor assembly positioned within said blower housing so as to be coaxial with the air inlet opening formed in the side wall thereof, said rotor having one of its opposite ends supported on said stub shaft and journaled for rotation about said stub shaft; and

(e) said rotor support brace comprising,

a first strap member configured to provide a flat portion intermediate a pair of oppositely angularly diverging strut portions,

a second strap member configured to provide a flat portion intermediate a pair of oppositely angularly diverging strut portions,

said first and said second strap members having their flat portions in abutting engagement with each other and having said stub shaft affixed thereto and extending laterally therefrom, and

each of the strut portions of said first and said second strap members twisted adjacent its extending end to form a mounting pad thereon.

4,199,303

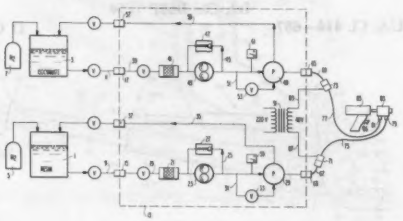
FEEDER FOR APPARATUS FOR EJECTING A MIXTURE OF A PLURALITY OF LIQUIDS

Frederick E. Gusmer; Denis S. Commette, both of Mantoloking, and Robert A. Bairunas, Bordentown, all of N.J., assignors to Gusmer Corporation, Lakewood, N.J.

Division of Ser. No. 727,981, Sep. 29, 1976, Pat. No. 4,131,395. This application Feb. 2, 1978, Ser. No. 874,642

Int. Cl.[2] F04B *1/30*; G05D *7/00*

U.S. Cl. 417—216 **2 Claims**



1. A feeder for apparatus for ejecting a mixture of a plurality of liquids, comprising a plurality of swash plate proportioning pumps one individual to each of the liquids, each of said swash pumps delivering to a common point of usage, each said swash plate pump having a swash plate mounted for swinging movement about an axis parallel to the plane of the plate, and means responsive to swinging movement of less than all said swash plates toward a no-flow position, to halt simultaneously the operation of all said pumps thereby to prevent pumping of liquid from all of said pumps when the capacity of one of said pumps reaches a predetermined minimum.

4,199,304

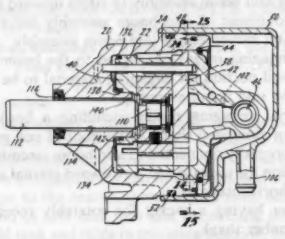
POSITIVE DISPLACEMENT COMPACT SLIPPER PUMP

Guntis V. Strikis, Belleville; Michael F. Halacka, Northville, and Ronald W. Crain, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 13, 1978, Ser. No. 885,912

Int. Cl.[2] F04B *49/00*

U.S. Cl. 417—310 **4 Claims**



1. A fluid pump comprising a pump housing, a pump stator

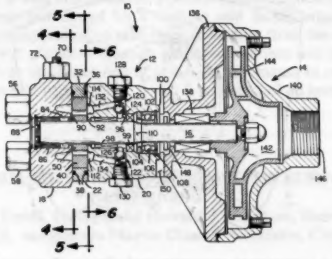
in said housing having an internal opening defining a closed internal cam surface with a minor axis and a major axis, a rotor having peripheral recesses, each cavity having received therein a pump slipper adapted to register in sliding contact with the internal surface of said stator, a low pressure cavity surrounding said stator within said housing, a pressure plate on one side of said stator in said housing and a second pressure plate on the opposite side of said stator in said housing, an end plate in said housing, said housing having a housing opening with an open end that is closed by said end plate, a reservoir surrounding said pump body and said end plate, a high pressure chamber in said housing defined by the inner end of the housing opening and said first pressure plate whereby a pressure force is exerted on said pressure plates and said stator to urge them into stacked registry, a shaft opening in said housing, a drive shaft received in said shaft opening and arranged in driving relationship with respect to said rotor, a fluid seal surrounding said shaft, a seal cavity in said housing receiving said seal, the low pressure side of said pump communicating with said low pressure cavity surrounding said stator and the high pressure side of said pump communicating with said housing opening at the innermost end thereof, and an oil passage extending from the opening for said drive shaft on the inboard side of said seal to said low pressure cavity surrounding said stator.

4,199,305

HYDRAULIC GEROTOR MOTOR WITH BALANCING GROOVES AND SEAL PRESSURE RELIEF

Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Continuation of Ser. No. 841,663, Oct. 13, 1977, abandoned.
This application May 3, 1979, Ser. No. 35,628
Int. Cl.[2] F04B *49/02*; F01C *1/10, 21/00*; F03C *3/00*
U.S. Cl. 417—440 **1 Claim**



1. A hydraulic motor comprising:

(a) an end plate having a cylindrical axial bore, a fluid inlet port and a fluid outlet port formed therein, each of said ports individually communicating with first and second crescent-shaped grooves formed in one face of said end plate and with each other by way of a by-pass bore;

(b) a needle valve threadedly mounted in said end plate and cooperating with said by-pass bore for permitting selective blocking and unblocking of said by-pass bore;

(c) a shaft having one end thereof journaled for rotation in said cylindrical axial bore in said end plate;

(d) a Gerotor assembly abutting said one face of said end plate and including a stator ring having a cylindrical bore with two axial grooves extending inwardly from said bore and arcuately spaced from one another, said stator ring being secured to said end plate, an outer gear of the internal tooth type having a cylindrical outer peripheral surface which is rotatable within said cylindrical bore of said stator ring, and an inner gear secured to said shaft, said inner gear being eccentrically disposed within said outer gear and having a lesser number of teeth than said outer gear, the tops of all teeth of said inner gear being shaped to always be in sliding contact with the teeth of said outer gear;

(e) a front plate having one face thereof abutting said Gerotor assembly and secured to said stator ring and having an axial bore extending therethrough for receiving said shaft in rotational engagement therein, said one face of said front plate having first and second crescent-shaped grooves therein in substantial alignment with said crescent-shaped grooves formed in said one face of said end plate and with predetermined segments of the interface between said inner and said outer gears of said Gerotor assembly;

(f) a seal member surrounding said shaft and disposed within said axial bore in said front plate;

(g) first and second radial bores in said front plate extending from said axial bore in said front plate to the outer surface of said front plate;

(h) first and second channels individually formed between said first and second radial bores and said first and second crescent-shaped grooves formed in said one face of said front plate; and

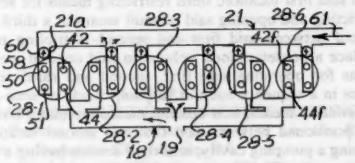
(i) first and second pressure relief valves disposed in said first and second radial bores in a normal fluid blocking relationship between said axial bore in said front plate and said first and second channels, the arrangement being such that upon closure of said by-pass bore by said needle valve if the fluid pressure acting on said seal member exceeds a predetermined value one of said first and second pressure relief valves will assume a fluid passing relationship between said axial bore in said front plate and one of said first and second channels.

4,199,306

METHOD AND APPARATUS FOR COMPRESSING GAS

Michael Q. Hughes, 5821 Lisa La., Austell, Ga. 30001

Filed Jun. 26, 1978, Ser. No. 919,125
Int. Cl.[2] F04B *23/06*
U.S. Cl. 417—458 **3 Claims**



1. Apparatus for pumping a gas, said apparatus including a cylinder, a piston reciprocable within said cylinder, and means for causing said piston to reciprocate within said cylinder, intake means for placing a quantity of gas within said cylinder as said piston moves in one direction, a discharge chamber immediately adjacent to said cylinder, discharge valve means between said cylinder and said discharge chamber for providing selective communication between said cylinder and said discharge chamber, and cooling means for cooling said discharge chamber, said discharge valve means comprising a first discharge valve and a second discharge valve, a discharge port communicating with said discharge chamber at one side thereof, said first discharge valve being located at the opposite side of said discharge chamber from said discharge port, said second discharge valve being located on the same side of said discharge chamber as said discharge port, said first discharge valve being constructed to open under smaller pressure differential than said second discharge valve, a discharge manifold for receiving a gas from said discharge chamber, manifold valve means between said discharge chamber and said discharge manifold, said manifold valve means comprising a check valve oriented to allow fluid flow from said discharge chamber to said discharge manifold, an intake chamber immediately adjacent to said cylinder, intake valve means between

said intake chamber and said cylinder for providing selective communication between said cylinder and said intake chamber, and cooling means for cooling said intake chamber, said intake valve means comprising a first intake valve and a second intake valve, an intake port communicating with said intake chamber at one side thereof, means for supplying gas to said intake port, said first intake valve being located at the opposite side of said intake chamber from said intake port, said second intake valve being located on the same side of said intake chamber as said intake port, said first intake valve being constructed to open under smaller pressure differential than said second intake valve.

4,199,307

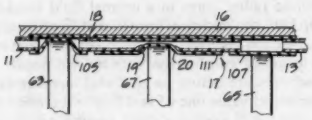
MEDICAL INFUSION SYSTEM

Jal S. Jassawalla, San Francisco, Calif., assignor to Andros Incorporated, Berkeley, Calif.

Continuation-in-part of Ser. No. 812,904, Jul. 5, 1977, abandoned. This application Feb. 17, 1978, Ser. No. 878,700

Int. Cl.[2] **F04B** *43/08, 45/06*

U.S. Cl. 417—474 **3 Claims**



1. A pump for use in a medical infusion system for pumping fluid or semi-solids from an upstream portion of the infusion system to a downstream portion thereof, said pump comprising, conduit means, means for supporting said conduit means for extending between the upstream and downstream portions of the system, first constricting means for selectively restricting and opening said conduit means at a first location thereof, second restricting means for selectively restricting and opening said conduit means at a second location thereof spaced from said first location, third restricting means for selectively restricting and opening said conduit means at a third location thereof between said first and second restricting means to displace a predetermined volume in said conduit means, and means for operating said first, second and third restricting means in a sequence such as to pump fluids or semi-solids in said conduit means, said conduit means including a rigid section positioned between said first and second locations and defining a pumping cavity, said rigid section having a window therein, a flexible diaphragm extending across said window and being impermeable to the passage of fluid or semisolids therethrough, said third restricting means being engaged with said diaphragm, said operating means including drive means for providing incremental movement of said third restricting means to control incrementally the pumping of fluids or semi-solids said rigid section of said conduit means being of substantially tubular configuration, said diaphragm being formed in part by a relatively flexible sleeve positioned coaxially of said rigid section and extending over said window therein whereby said diaphragm comprises the portion of said flexible sleeve extending over said window.

4,199,308

AXIAL COMPLIANCE/SEALING MEANS FOR IMPROVED RADIAL SEALING FOR SCROLL APPARATUS AND SCROLL APPARATUS INCORPORATING THE SAME

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 2, 1978, Ser. No. 947,460

Int. Cl.[2] **F01C** *1/02, 19/08;* **F04C** *27/00*

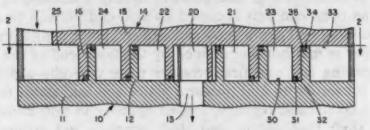
U.S. Cl. 418—55 **27 Claims**

1. A scroll member suitable for constructing a scroll apparatus, comprising in combination

(a) an end plate;

(b) an involute wrap attached to said end plate and having a two-sided channel cut along essentially the length of the surface of said wrap, said channel opening toward the centerline of said scroll element and having a back surface and a seating surface;

(c) a seal element positioned in said channel, compressively loaded toward said back surface of said channel and extending throughout essentially the entire length thereof, said seal element being suitable for making sealing contact with the surface of an end plate of a complementary scroll member forming part of said scroll apparatus; and



(d) seal spring means formed as a continuous strip engageable with said back surface of said channel and having a plurality of spring members configured to exert an axial force on said seal element in the direction of said end plate of said complementary scroll member.

4,199,309

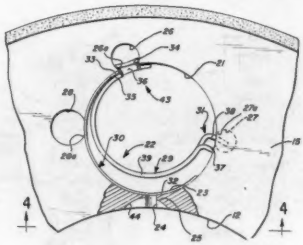
CIRCULAR CAVITY DISCHARGE VALVE

Ralph F. Connor, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 23, 1978, Ser. No. 871,388

Int. Cl.[2] **F04C** *29/08;* **F04B** *39/10;* **F16K** *15/14*

U.S. Cl. 418—270 **23 Claims**



1. In a compressor apparatus including wall means having a first portion defining a compression chamber, an inlet passage opening to said chamber, and compressing means disposed within said chamber, an improved outlet structure comprising:

a second portion of said wall means defining a right-circularly cylindrical discharge valve chamber having a first surface portion spaced adjacent said compression chamber;

an outlet extending through said second portion of the wall means to provide a discharge passage from said compression chamber to said discharge valve chamber through said first surface portion;

a valve stop defining a resilient, arcuate backup portion, a securing portion secured to said wall means within said valve chamber;

a resilient semicylindrical roll-formed metallic valve member juxtaposed radially outwardly to said valve stop and biased into accurate facial engagement with said cylindrical first surface portion of the discharge valve chamber so as to permit discharge fluid flow through said discharge passage into said discharge valve chamber, the inward movement of the valve member being effectively limited by engagement thereof with said valve stop backup portion, said valve member comprising a thin element having

a double rolled end portion aligned with said outlet and a single rolled portion extending from said end portion and secured to said wall means; and

cooperating means on said valve stop and said wall means spaced substantially from said securing portion for maintaining said backup portion in spaced juxtaposed relationship to said outlet in the cylindrical surface portion of said second wall means portion, said cooperating means including first means for spacing said backup portion from said cylindrical surface portion and second means for aligning said backup portion with said outlet in a direction generally parallel to said cylindrical surface portion.

4,199,310

EXTRUSION APPARATUS

Arthur L. Phipps, Los Osos, Calif., assignor to Condec Corporation, Old Greenwich, Conn.

Filed Jul. 10, 1978, Ser. No. 922,541
Int. Cl.[2] B29D *27/00*; B29F *3/02*
U.S. Cl. 425—71 **28 Claims**

1. An inclined barometric leg for an extrusion line comprising an inclined elongated pipe extending from a first higher elevation to a pool of water at a second lower elevation, said pipe including a linear series of sections interconnected and sealed to form a vacuum chamber.

27. Foam extrusion apparatus comprising a first platform at a lower elevation, a second platform at a higher elevation horizontally spaced from the first, an inclined ramp extending from an edge of said second platform to a position beneath the facing edge of said first platform, a pool supported beneath said first platform and closed by a wall at said facing edge, an inclined pipe supported on said ramp extending from the edge of said second platform through said wall and into said pool, means to close the upper end of said pipe, and means to create a vacuum in said pipe to draw liquid from the pool up into said pipe.

4,199,311

SPRING BIASED EXTRUSION DEVICE FOR SURFACE PATTERNING

Michael J. Ferris, Chicago, and Howard J. Morrison, Deerfield, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sep. 25, 1978, Ser. No. 945,510
Int. Cl.[2] B28B *19/00*
U.S. Cl. 425—173 **9 Claims**

1. A toy extrusion device for modeling clay, or the like, comprising:

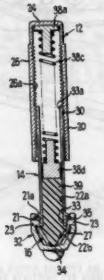
an upper housing having an open end, a closed end, and a longitudinally extending bore in communication with said open end and defining inner walls in said upper housing;

a plurality of internal threads extending along the inner walls and friction generating means extending along the exterior of the walls to facilitate rotating the same;

a generally hollow lower housing having an open bottom and top, a longitudinally extending cylindrical bore in communication with both said open bottom and top, the outer surface of said lower housing being provided with an external threaded section at the top and bottom ends, the threaded section at the top of said lower housing being engageable with the internal threaded section of said upper housing to permit telescoping of the respective upper and lower housing portions to decrease the length of the bore upon relative rotation;

a plurality of removable funneling housings mountable, one at a time, to said lower housing, an upper portion of said funneling housings each having a generally cylindrical bore larger than the outer diameter of said lower housing, a portion of the wall defining said cylindrical bore having a threaded section for selective engagement with the threaded section on the lower end of said lower housing, said funneling housing bores tapering to a predetermined shaped opening at the opposite end of said funneling housing;

means for providing access into said cavity to insert a predetermined amount of viscous material; and



biasing means within the bores of the upper and lower housings for applying a biasing force to said viscous material to expel the material through said funneling portion, said biasing means including an upper rigid portion for centering a spring and for engagement with the closed end of said upper housing, a spring, and a lower movable piston for engaging said viscous material under the influence of said spring and for increasing the pressure applied to the viscous material as said upper and lower portions are telescoped by relative rotation to controllably force said material through said funneling housing so that a continuous line of extruded material can be formed.

4,199,312

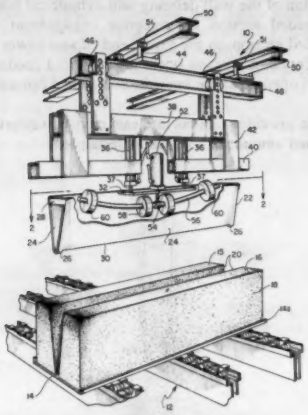
APPARATUS FOR BENDING CONCRETE CURBING

Angelo V. Beretta, and David Beretta, both of Lincoln, R.I., assignors to Durastone Co., Lincoln, R.I.

Filed Mar. 27, 1978, Ser. No. 891,129
Int. Cl.[2] B28B *11/00*
U.S. Cl. 425—383 **10 Claims**

1. Apparatus for simultaneously bending pairs of unset precast zero slump concrete curbing as they emerge in spaced parallel relation from an automatic casting machine, said curbing having inclined sides in facing relation whereby the space between each pair of curbing is substantially V-shaped, said apparatus comprising an elongated blade-like tool having a pair of opposed sidewalls defining a normally V-shaped cross sectional configuration and adapted for positioning between said pair of curbing while in such normal configuration with said opposed sidewalls contacting said inclined sides, said sidewalls being outwardly flexible, first means for forcing said tool between said pair of curbing and second means for forcing said flexible sidewalls apart from each other at a selected portion thereof along the longitudinal extent thereof so as to impart curvature to said sidewalls and simultaneously cause corresponding bending of said spaced curbing and thereafter enabling said sidewalls to return to their normal configuration so as to facilitate the removal of said tool from between said pair of curbing, said second means comprising a longitudinally orientated first shaft to which longitudinally spaced rollers are mounted, said rollers contacting said sidewalls at said selected

locations thereof, and means for moving said shaft inwardly and outwardly of said tool so as to respectively force apart said



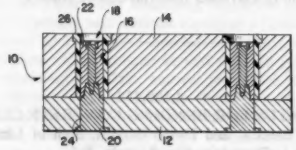
sidewalls and permit them to return to said normal configuration.

4,199,313

DETACHABLE ALIGNING PIN FOR DIE ASSEMBLY

Ottmar G. Bohnenberger, 455 Bayberry La., Mountainside, N.J. 07092

Filed Jun. 2, 1978, Ser. No. 912,086
Int. Cl.[2] B22C *21/10*; B28B *7/04*
U.S. Cl. 425—408 **8 Claims**



1. In a die assembly, an improved aligning pin arrangement, comprising:

relatively movable first and second dies,

a plurality of guide pin assemblies on said first die and an equal plurality of aligning passageways formed on said second die for receiving respective ones of said guide pin assemblies,

each of said guide pin assemblies including a first section mounted within said first die and a second aligning pin section connected to said first section, said second aligning pin sections extending above the surface of said first die and having an outer configuration substantially equal to the inner configuration of said aligning passageways for entering an associated one of said plurality of aligning passageways for aligning said first and second dies, and

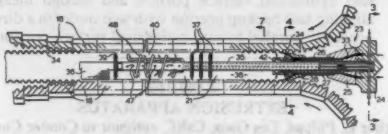
each of said second aligning pin sections being detachably connected to a respective first section and including a through hole and means extending therethrough for engaging said respective first sections and securing said respective second aligning pin sections thereto, so that each of said second aligning pin sections may be detached from its respective first section after said first and second dies have been aligned and are ready to be used.

4,199,314

APPARATUS FOR PRODUCING THERMOPLASTIC TUBING

Gerd P. H. Lupke, 46 Stornoway Cres., and Manfred A. A. Lupke, 35 Ironshield Cres., both of Thornhill, Canada

Filed Nov. 28, 1977, Ser. No. 855,409
Claims priority, application Canada, Dec. 1, 1976, 266970
Int. Cl.[2] B29F *3/08, 3/03*
U.S. Cl. 425—532 **2 Claims**



1. Apparatus for producing corrugated thermoplastic tubing, the apparatus comprising a pair of complementary mold asssemblies each of which has an endless array of articulately interconnected mold blocks, drive means operatively associated with said mold assemblies for driving the mold blocks of each mold assembly in synchronism with the mold blocks of the other mold assembly along a forward run in which the mold blocks of the mold assemblies are in cooperative interengagement to provide an axially extending tubular mold tunnel of corrugated form defined by alternating crests and troughs, and back along a return run, an extrusion head disposed at the entrance to the tubular mold tunnel for forming a tube of thermoplastic material, and gas supply means for supplying pressurized gas to the interior of the tube of thermoplastic material within the tubular mold tunnel for urging said tube outwardly against the cooperatively interengaged mold blocks forming the tunnel, wherein in each mold block passages extend between the bases of the troughs of the corrugations and the exterior of the mold block, these passages which communicate with the base of each trough throughout the length thereof comprising continuous grooves which extend along the bases of the troughs of the corrugations, with these grooves in each mold block communicating with a manifold recess which is provided in the mold block and which communicates with the exterior of the mold block through port means, a stationary suction chamber which is connected to a suction source being so positioned as to communicate with said port means during movement of the mold blocks along the forward runs, and a stationary pressure chamber which is connected to a source of pressurized fluid being so positioned downstream of the suction chamber as to communicate with said port means during continued movement of the mold blocks beyond the suction chamber along the forward runs.

4,199,315

APPARATUS FOR THE INJECTION MOLDING OF PNEUMATIC TIRES HAVING SYMMETRICAL PARTS OF SIMILAR PHYSICAL CHARACTERISTICS

Achille Gallizia, and Paolo Bandel, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Division of Ser. No. 766,038, Feb. 7, 1977, Pat. No. 4,123,496.
This application Jun. 30, 1978, Ser. No. 921,069
Claims priority, application Italy, Feb. 19, 1976, 20307 A/76
Int. Cl.[2] B29F *1/04*; B29H *3/08*
U.S. Cl. 425—572 **15 Claims**

1. An apparatus for the injection molding of pneumatic tires, comprising

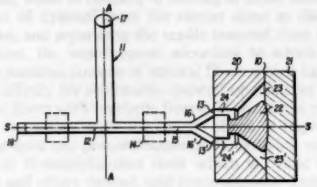
in combination with a mold provided with cavities arranged to generate symmetrical parts of the tire having the desired geometrical characteristics,

at least one primary feed-conduit for a primary feed stream of fluid molding compound;

a first means, for drawing, from said primary feed-conduit, first intermediate streams predominantly formed from the outer strata of said primary feed stream;

a second means, for drawing, from said primary feed conduit, second intermediate streams predominantly formed from the axial strata of said primary feed stream;

a third means, for combining, at least one of each of said first and second intermediate streams, to form a combined stream; and



a plurality of injection conduits, each one for an injection stream drawn from said combined stream, for filling a mold cavity corresponding to each part of every pair of symmetrical parts of the tire, with fluid molding compound contained in said injection stream.

4,199,316

TOOLS FOR INJECTION MOULDING MACHINES

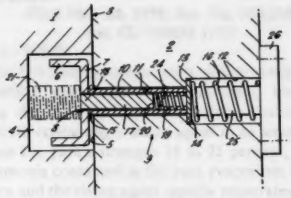
Stanley A. Bradbury, London, England, assignor to Cable Supports Limited, United Kingdom

Filed Jun. 22, 1978, Ser. No. 917,969

Claims priority, application United Kingdom, Mar. 9, 1978, 9446/78

Int. Cl.[2] B29F *1/06*

U.S. Cl. 425—577 **7 Claims**



1. A tool for use in a moulding machine comprising:

a mould defining a mould cavity;

means for introducing plastic material under pressure into the mould; and

means for supporting a core insert in the mould cavity away from the mould during a moulding operation, said supporting means comprising at least one support member, means for mounting said support member for movement between a first position in which the member projects into the mould cavity so as to support the core insert at the commencement of a moulding operation and a second position in which the member is at least partially retracted from the mould cavity to disengage from the core insert, and means for urging said support member toward said first position, whereby when material is introduced into the mould cavity the support member is moved from the first position to the second position against the force of said urging means by the pressure of the material in the mould cavity during the moulding operation after the core insert has been enveloped in the material.

4,199,317

PRINTING PROCESS

Charles Serex, Geneva, Switzerland, and Robert Decombe, Ferney-Voltaire, France, assignors to Sublistatic Holding SA, Glaris, Switzerland

Filed Dec. 2, 1974, Ser. No. 528,862

Claims priority, application Switzerland, Dec. 13, 1973, 17439/73

Int. Cl.[2] D06P *5/00, 5/20, 5/22*

U.S. Cl. 8—2.5 A 6 Claims

1. In a process for the dry thermoprinting of textile materials which comprises bringing into face-to-face contact

(a) a flexible paper temporary carrier sheet bearing on the textile material contacting face thereof at least one sublimable disperse transfer dyestuff, and

(b) a textile material, subjecting the carrier sheet and textile material, while in contact, to heating to cause sublimation transfer of dyestuff from the carrier sheet to the textile material, and separating the textile material from the carrier sheet, the improvement according to which (1) the textile material consists of natural fibers which have little or no affinity for sublimable dyestuff or mixtures of such natural fibers with synthetic fibers, (2) the textile material, prior to contact with the carrier sheet, is impregnated with at least one precondensate of N-methylol -melamine resin or N-methylol-urea resin which is cyclic or non-cyclic and ethers thereof, said precondensate containing a Lewis acid catalyst, (3) the curing of the N-methylol resin is effected during the transfer of dyestuff to the textile material, and (4) the sublimable dyestuff is selected from the group consisting of

1,4-dimethylamino-anthraquinone,

chlorinated 1,5-diamino-4,8-dihydroxy-anthraquinone,

brominated 1,5-diamino-4,8-dihydroxy-anthraquinone,

1-amino-2-phenoxy-4-hydroxy-anthraquinone,

3-hydroxyquinophthalone,

1-aminoazobenzene→phenol,

2-hydroxy-5-methyl-4'-acetylamino-phenyl-azo-benzene,

5-butyrylamino-isothiazolanthrone,

1,4-diisopropylaminoanthraquinone, and

1,5-diisopropylaminoanthraquinone.

4,199,318

WASHFAST DISAZO DYESTUFFS

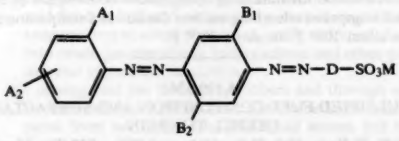
Hans A. Stingl, Toms River, N.J., assignor to Toms River Chemical Corporation, Toms River, N.J.

Division of Ser. No. 693,593, Jun. 7, 1976, Pat. No. 4,143,035, which is a continuation of Ser. No. 489,865, Jul. 19, 1974, abandoned, which is a continuation of Ser. No. 123,443, Mar. 11, 1971, abandoned. This application Nov. 20, 1978, Ser. No. 962,424

Int. Cl.[2] C09B *31/04, 31/06, 31/08*

U.S. Cl. 8—41 B 1 Claim

1. Polyamide fibers dyed with a compound of the formula



wherein

A_1 is hydrogen or methoxy,

A_2, B_1 and B_2 are independently hydrogen, methyl or methoxy, and D—SO_3M is

1-hydroxy-4-sulfo-2-naphthyl,

2-hydroxy-6-sulfo-1-naphthyl,

2-amino-6-sulfo-1-naphthyl, or

2-amino-8-hydroxy -6-sulfo-1-naphthyl,

where M is hydrogen, alkali metal or ammonium, provided that at least one of A_1, A_2, B_1 and B_2 is methoxy, and no more than one of A_2, B_1 and B_2 is methyl, and further provided that when one of A_2, B_1 and B_2 is methyl, that said methyl be para to a methoxy group.

4,199,319

METHOD FOR TREATMENT OF COTTON YARN

Oleg M. Lifentsev; Boris N. Melnikov, both of Ivanovo; Gennady E. Zaitsev, Moscow, and Tamara E. Solovieva, Ivanovo, all of U.S.S.R., assignors to Ivanovsky Nauchno-Issledovatelsky Institut Khlopchatobumazhnoi Promvshlennosti, U.S.S.R.

Filed May 24, 1978, Ser. No. 909,295

Int. Cl.[2] D06M *1/00*

U.S. Cl. 8—116 R 4 Claims

1. Method of treating cotton yarn, which comprises impregnating cotton yarn with liquid ammonia; immersing and stretching the thus liquid ammonia-impregnated yarn in an aqueous bath containing a sizing agent in an amount sufficient to increase the yarn's strength 18 to 25 percent, whereby the liquid ammonia contained in the yarn evaporates to form voids in the yarn and the sizing agent rapidly penetrates into the thus formed voids, thus increasing the strength of the yarn; and drying and spooling the thus stretched yarn.

4,199,320

WHITENING OF CELLULOSIC TEXTILES

Jean Balland, Chateaurenault, France, assignor to Manufacture de Products Chimiques Protex, Paris, France

Filed Jan. 16, 1979, Ser. No. 4,055

Int. Cl.[2] D06M *1/02*

U.S. Cl. 8—139 7 Claims

1. In a process of boiling and hydrophilizing of cellulose fibers in an alkaline medium, the improvement wherein the treatment is performed in the presence of a hydrazine phosphonate or a double phosphonate of hydrazine and another cation.

4,199,321

BASIC DYEING OF POLY(ARYLENE SULFIDE) RESINS

Jennings P. Blackwell, and Dale O. Tieszen, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 27, 1978, Ser. No. 946,230

Int. Cl.[2] D06P *5/00*

U.S. Cl. 8—168 R 21 Claims

1. A process for increasing the affinity of a poly(arylene sulfide) resin composition for basic dyes comprising contacting said composition with a sulfonating agent selected from the group consisting of sulfur trioxide, fuming sulfuric acid, and chlorosulfonic acid under conditions such that the affinity of said composition for basic dyes is increased.

4,199,322

ANTIBACTERIAL TEXTILE FINISHES UTILIZING ZINC ACETATE AND HYDROGEN PEROXIDE

Gary F. Danna, New Orleans, La.; Tyrone L. Vigo, Knoxville, Tenn., and Clark M. Welch, Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 934,288, Aug. 17, 1978, Pat. No. 4,172,841. This application Dec. 28, 1978, Ser. No. 974,171

Int. Cl.[2] D06M *13/34;* B05D *3/02*

U.S. Cl. 8—186 15 Claims

1. A process for rendering cellulosic textiles bacteriostatic, which process comprises:

(a) immersion of the cellulosic textile in an aqueous treating solution which contains about from 1% to 30% zinc acetate and from 1% to 30% hydrogen peroxide in water, and which, at zinc acetate concentrations of 5% or greater, also contains from 1% to 25% acetic acid to prevent precipitation of peroxide complexes of zinc acetate,

(b) removal of excess treating solution from the cellulosic textile,
(c) drying the cellulosic textile to cause deposition of peroxide complexes of zinc acetate on the textile,
(d) washing the cellulosic textile to remove excess reagents, and
(e) drying the treated cellulosic textile to remove water.

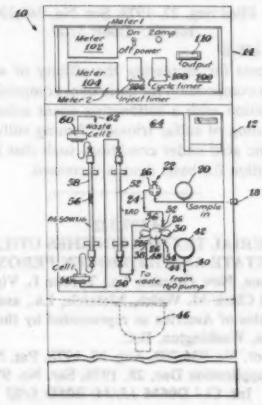
7. A process for preparing durable press cotton fabrics that are bacteriostatic, which process comprises:
(a) immersion of a cotton fabric in an aqueous treating solution containing a durable press finished reagent selected from the group consisting of dimethylolethyleneurea and dimethyloldihydroxyethyleneurea, and also containing a Lewis acid catalyst,
(b) drying the fabric,
(c) heating the fabric to a temperature producing cellulose crosslinking by the durable press reagent,
(e) washing the fabric,
(f) drying the fabric,
(g) immersion of the resulting durable press fabric in an aqueous solution which contains about from 1% to 30% zinc acetate and from 1% to 30% hydrogen peroxide in water, and which, at zinc acetate concentrations of 5% or greater, also contains from 1% to 25% acetic acid to prevent precipitation of peroxide complexes of zinc acetate,
(h) drying the cellulosic textile to cause deposition of peroxide complexes of zinc acetate on the textile,
(i) washing the cellulosic textile to remove excess reagents, and
(j) drying the treated cellulosic textile to remove water.

4,199,323

ANALYTICAL TECHNIQUE FOR QUANTITATING ACID/SALT AND BASE/SALT SAMPLES FOR SPECIES CONCENTRATION

Theodore E. Miller, Jr., and Timothy S. Stevens, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 8, 1978, Ser. No. 913,786
Int. Cl.[2] G01N *31/04, 27/08*
U.S. Cl. 23—230 R **28 Claims**



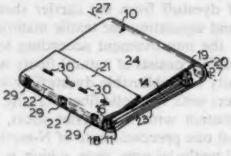
1. The analytical method of assaying for acid species concentration in an acid/salt sample matrix by the steps comprising injecting a sample into an aqueous carrier stream, analyzing the sample to obtain a response proportionate to the acid plus salt concentration, derivatizing the acid species to water and the salt to a hydroxide derivative, said derivatization step being carried out in a strong base ion-exchange means in the hydroxide ion form, and wherein the step is characterized by the capture of substantially all of the sample anions at the active ion-exchange sites, and the substitution of a substantially equivalent amount of hydroxide ions, eluting the sample with an aqueous eluent, analyzing the effluent to obtain a response proportionate to the salt concentration, and comparing the thusly taken responses to estimate the acid species concentration.

4,199,324

MATCH CONTAINER HAVING A REMOTELY OPERABLE STRIKING CHAMBER

Walter G. McPeak, 221½ S. Blvd., Tallahassee, Fla. 32301

Filed May 14, 1976, Ser. No. 686,498
Int. Cl.[2] A24F *27/12, 27/20*
U.S. Cl. 44—44 **3 Claims**



1. A combination safety match holder and ignition chamber comprising:
(a) a relatively flat rectangular match retainer (**11**);
(b) a U-shaped cover segment (**22**) cupped over one of the rectangular ends (**16**) of said retainer to form an elongated ignition chamber (**18**) therebetween, said chamber having at least one open end;
(c) a flat cover segment (**23**) forming an extension of one leg of said U-shaped segment and overlying one of the flat sides of said retainer, and
(d) means (**29, 30**) for mounting said flat cover segment on said retainer for sliding movement transversely of said chamber in one direction to increase the distance between the proximate surfaces of said U-shaped segment and retainer end, and for transverse movement in the opposite direction to reduce said distance, whereby the chamber is expanded to match-receiving position and contracted to match-gripping position.

4,199,325

INHIBITING SPONTANEOUS COMBUSTION OF COAL

Robert H. Smith, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 22, 1978, Ser. No. 963,053
Int. Cl.[2] C10L *5/00*
U.S. Cl. 44—1 R **4 Claims**

1. A method for inhibiting spontaneous combustion of coal which comprises adsorbing carbon dioxide at a temperature of from about 100° F. to about 200° F.

4,199,326

EMULSIFIED FUEL COMPOSITION AND SURFACTANT USEFUL THEREIN

Paul S. T. Fung, 10th Floor, Universal Bldg., 522 Tun Hwa S. Rd., Taipei, Taiwan

Filed Mar. 23, 1978, Ser. No. 888,641
Int. Cl.[2] C10L *1/32*
U.S. Cl. 44—51 **2 Claims**

1. An emulsified fuel composition consisting essentially of:
I. a continuous phase of hydrocarbon fuel oil having a boiling point of 200° to 400° C.,
II. a discontinuous phase of water;
III. a surfactant consisting essentially of:
A. nitrobenzene in an amount equal to 5 to 30 weight percent based on the weight of surfactant;

B. benezene in an amount equal to 5 to 30 weight percent based on the weight of surfactant;

C. stearic acid in an amount equal to 5 to 15 weight percent based on the weight of surfactant;

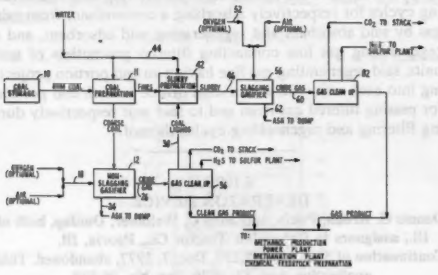
D. an ethylene oxide condensate of the formula $H(CH_2CH_2O-)_nR$ wherein R is a member selected from the group consisting of the residues of lower alcohols and the residues of monocarboxylic acid esters of lower alcohols, wherein n is an integer 10 to 40 inclusive, and wherein the condensate is present in an amount equal to 5 to 15 weight percent based on the weight of surfactant, and

E. a hydrocarbon oil constituting the balance of the surfactant, wherein the water is present in an amount equal to 40 to 50 percent of the composition, wherein the surfactant is present in an amount equal to 50 to 500 cc per metric ton of composition.

4,199,327
PROCESS FOR GASIFICATION OF COAL TO MAXIMIZE COAL UTILIZATION AND MINIMIZE QUANTITY AND ECOLOGICAL IMPACT OF WASTE PRODUCTS

Hugh G. Hempill, Pleasonton, and Robert E. Hurney, San Francisco, both of Calif., assignors to Kaiser Engineers, Inc., Oakland, Calif.

Filed Oct. 30, 1978, Ser. No. 956,263
Int. Cl.[2] C10J *3/16, 3/46*
U.S. Cl. 48—202 **13 Claims**



1. A process for the gasification of coal wherein the total available coal is utilized in separate gasification systems and is converted into environmentally acceptable gaseous fuel and the quantity and type of waste products from said gasifier systems are kept to a minimum, comprising the following steps:

(a) separating coal into a coarse fraction and a fine fraction,

(b) feeding the coarse fraction to a fixed bed non-slagging gasifier in which,

(i) oxygen containing gas and steam are blown through said fixed bed of coal within said pressurized gasifier at temperatures to cause the coal to gasify and break down into crude gas containing hydrocarbons and other gaseous and particulate impurities,

(ii) passing said gas through scrubbers and through condensers to remove particulates and condensable components from said impurities as a liquid stream and to a first gas purification system for removal of hydrogen sulfide and coabsorbed carbon dioxide,

(c) forming a mixture of said liquid stream and said fine fraction of coal to form a pumpable slurry, said liquid stream containing particulates and condensable impurities removed from the crude gas stream from said fixed-bed gasifier and comprising tars, oils and phenol water in an amount to contribute significant fuel value to said slurry,

(d) passing said slurry with oxygen containing gas to an entrained flow gasifier maintained under pressure,

(i) rapidly reacting said mixture in said entrained flow gasifier to form a crude gas,

(ii) passing said gas from said entrained flow gasifier through particulate removal scrubbers and then to heat exchangers to a second gas purification system to remove hydrogen sulfide and coabsorbed carbon dioxide and

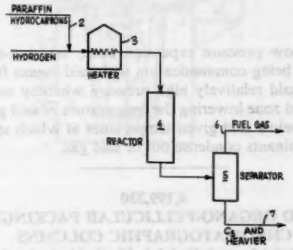
(iii) removing the ash from said entrained flow gasifier, and

(e) recovering said streams of purified gas.

4,199,328
PROCESS FOR PRODUCING METHANE FROM NAPHTHA

Edward L. Cole, Fishkill; John H. Estes, and Robert M. Suggitt, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,191
Int. Cl.[2] C10G *13/30*
U.S. Cl. 48—213 **8 Claims**



1. A process for the production of methane from higher molecular weight paraffin hydrocarbons which comprises contacting a paraffin-containing petroleum derived feedstock consisting essentially of paraffins containing 5 to 30 carbon atoms per molecule and comprising not more than 10 percent by volume aromatic hydrocarbons and not more than 5 percent by volume olefinic hydrocarbons admixed with hydrogen with a catalyst consisting essentially of a crystalline aluminosilicate zeolite Y combined with 0.5 to 5 weight percent lanthanum and 0.5 to 5 weight percent cobalt wherein the mole ratio of cobalt to lanthanum is within the range of 0.5 to 5 at a temperature in the range of 500° to 1000° F. and at a pressure in the range of 50 to 1000 psig and a feed rate of 0.5 to 5 volumes of liquid hydrocarbon feed per volume of catalyst per hour to effect conversion of said hydrocarbon and hydrogen to gaseous hydrocarbons consisting essentially of methane.

4,199,329
PROCESS AND APPARATUS FOR THE REMOVAL OF VAPORIZED CONTAMINANTS FROM CLOSED GAS SYSTEM

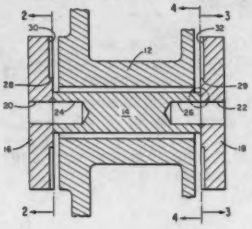
John R. Bouchard, Canton, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Nov. 20, 1978, Ser. No. 962,135
Int. Cl.[2] B01D *57/00*
U.S. Cl. 55—17 **7 Claims**

1. In a closed gas system wherein said gas is generally at a given temperature and contains vaporized contaminants, said system including critical areas subject to damage from contaminants being deposited from said gas due to relatively high pressures of said gas existing thereabout, the method of preventing deposition of said contaminants in said critical areas which comprises the step of reducing the pressure of said gas from said relatively high pressure to a relatively low pressure at a point remote from said critical areas, said gas expanding at said point to attain a temperature below said given temperature at which said vaporized contaminants condense from said gas and are deposited at said point.

4. In a closed gas system wherein said gas is generally at a

given temperature and contains vaporized contaminants, said system including critical areas wherein deposition of said contaminants because of local relatively high pressure cannot be tolerated, the combination of means of providing said gas at said relatively high pressure communicating with said critical areas and means disposed adjacent said critical areas forming a



relatively low pressure expansion zone, said last-mentioned means also being communication with said means for providing gas at said relatively high pressure whereby said gas expands in said zone lowering the temperature of said gas therein to a point below said given temperature at which said vaporized contaminants condense out of said gas.

4,199,330

BONDED ORGANO-PELLICULAR PACKINGS FOR CHROMATOGRAPHIC COLUMNS

Terry J. Nestrick, and Rudolph H. Stehl, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 877,058, Feb. 13, 1978, abandoned. This application Jan. 22, 1979, Ser. No. 5,274

Int. Cl.[2] B01D *15/08;* **B01J** *31/02*

U.S. Cl. 55—67 **20 Claims**

1. A process for making a chromatographic column packing which comprises:

(1) contacting a silica surface having Si-OH groups with $SiCl_4$ for a time sufficient to react essentially all of said hydroxyl groups, thereby producing a chlorosilylated surface,

(2) reacting by contacting the chlorosilylated surface with an inert solvent solution of a polyol having an average molecular weight of at least about 3,000 at a temperature of about 100° C.–250° C.,

(3) contacting the chlorosilylated surface-polyol reaction product at about 50° C.–150° C. with a lower alkanol sufficient to neutralize residual chlorosilyl groups, and

(4) separating the neutralized product from the reaction mixture as an essentially pure and dry solid.

13. A process for making a chromatographic separation of components contained in a sample which comprises:

(1) mixing the sample with a carrier gas, and

(2) contacting the sample-carrier gas mixture with a packing permeable by said mixture and consisting essentially of a silica support having a chemically bonded organic surface coating, said packing prepared by

(a) contacting a silica surface having Si-OH groups with $SiCl_4$ under conditions whereby essentially all of said hydroxyl groups are reacted, thereby producing a chlorosilylated surface,

(b) reacting by contacting the chlorosilylated surface with an inert solvent solution of a polyol having an average molecular weight of at least about 3000 at a temperature of about 100°–250° C.

(c) contacting the chlorosilylated surface-polyol reaction product at about 50°–150° C. with a lower alkanol sufficient to neutralize residual chlorosilyl groups, and separating the neutralized product from the reaction mixture as an essentially pure and dry solid.

20. A chromatographic column containing a packing wherein said packing is prepared by the process of claim **1**.

4,199,331

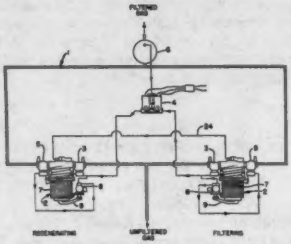
DUAL FILTER ASSEMBLY FOR COMPRESSED GAS

Virgil L. Frantz, Salem, Va., assignor to Graham-White Sales Corp., Salem, Va.

Filed Jun. 26, 1978, Ser. No. 918,719

Int. Cl.[2] B01D *53/04*

U.S. Cl. 55—161 **6 Claims**



1. A dual filter assembly for compressed gas, comprising a pair of filter units alternately receiving and filtering compressed gas from a source thereof, each of said units containing an adsorbent and alternating between filtering and regenerating cycles for respectively adsorbing a contaminant from said gas by said absorbant and regenerating said adsorbent, and a regenerating gas line connecting filtered gas outlets of said units, said regenerating gas line having an end portion projecting into each unit with a restricted orifice in each end portion for passing filtered gas from and to said unit respectively during filtering and regenerating cycles thereof.

4,199,332

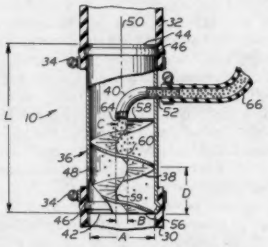
DEAERATOR DEVICE

Dennis G. Krohn, Pekin, and John C. Wellauer, Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 858,227, Dec. 7, 1977, abandoned. This application Apr. 13, 1979, Ser. No. 29,812

Int. Cl.[2] B01D *19/00*

U.S. Cl. 55—191 **6 Claims**



1. A deaerator device **(10)** comprising:

a tubular casing **(36)** having a substantially uninterrupted cylindrical inner wall **(48)**, a central axis **(50)**, an axially open inlet end **(42)**, an axially open outlet end **(44)**, and a radial opening **(52)** therethrough;

a helical blade **(38)** connected to said inner wall **(48)**, said helical blade **(38)** having an outlet edge **(58)** and a radially inner spiraling edge **(59)** defining an unobstructed central opening **(60)** on the axis **(50)**, said unobstructed central opening **(60)** being defined solely by said radially inner spiraling edge **(59)**, said helical blade **(38)** being of a con-

struction sufficient for moving entrained gas bubbles relatively freely and convergingly toward the axis (**50**) and said central opening (**60**) as fluid to be treated flows axially into said axially open inlet end (**42**) through said tubular casing (**36**) and axially out said axially open outlet end (**44**); and

a vent pipe (**40**) having an entry end (**64**) located adjacent said outlet edge (**58**) of said helical blade (**38**) on the axis (**50**), said vent pipe (**40**) extending inwardly through said radial opening (**52**) and being of a construction sufficient for receiving the gas bubbles emanating axially from said central opening (**60**) and communicating the gas bubbles radially outwardly of the tubular casing (**36**).

4,199,333

FILTER BOX FOR TEXTILE MACHINES

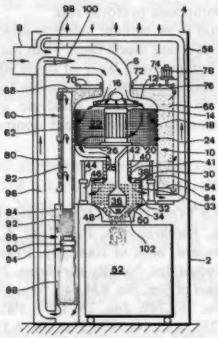
Johann W. Ferri, Greifensee; Werner Steinmetz, Wetzikon; Emil Briner, Winterthur, and Bruno Fritschi, Uster, all of Switzerland, assignors to Luwa AG, Zurich, Switzerland

Filed Feb. 22, 1979, Ser. No. 14,204

Claims priority, application Switzerland, Mar. 3, 1978, 2325/78

Int. Cl.[2] **B01D** *50/00*

U.S. Cl. 55—290 **16 Claims**



1. A filter box for textile machines, comprising:

inlet connection means for the infeed of raw air containing fibers and contaminants;

a filter element structured in the form of a rotatable drum;

means for cleaning the filter element of contaminants entrained thereby;

ventilator means for drawing raw air containing the fibers and contaminants from said inlet connection means into said filter element;

a fiber preseparator arranged within and forwardly of the rotatable drum-like filter element and operatively flow communicating by means of said ventilator means with said inlet connection means;

a fiber separator arranged within said filter element and operatively connected with said fiber preseparator;

said filter element having an inner wall; and

said means for cleaning including a suction element and subsequently connected dust separator operatively associated with the inner wall of said filter element.

4,199,334

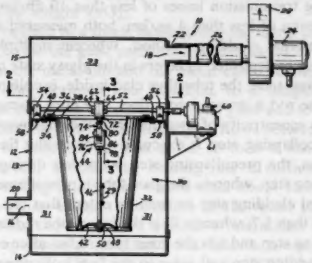
SELF-CLEANING AIR FILTER

James L. Berkhoel, St. Paul Park, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed May 26, 1978, Ser. No. 909,841

Int. Cl.[2] **B01D** *46/04*

U.S. Cl. 55—304 **12 Claims**



1. Self-cleaning apparatus for removing particulate material from air comprising:

(a) a housing having an air inlet and an air outlet;

(b) partition means for dividing the interior of said housing into an air inlet chamber and an air outlet chamber, said partition means having an aperture formed through it;

(c) a filtering means comprising a hollow, tubular filter having a relatively rigid configuration capable of being distorted;

(d) said filter having opposite open ends and a longitudinal axis extending between said ends, said filter being formed of a pleated porous media;

(e) a closure plate secured to one of the ends of said filter;

(f) means mounting said filter to said partition means in said housing with said axis extending generally vertically, said mounting means including means removably securing the other end of said filter relative to said partition means so as to provide fluid communication between the interior of said filter and said aperture in said partition means, and means sealing the exterior of said filter from fluid communication to said air outlet chamber except to by passage through said filter whereby air laden with particulate material moving from said inlet to said outlet passes through said filter into the interior thereof and deposits particulate material on the outer surface of said filter;

(g) means for removing particulate material collected on the outer surface of the filter, said particulate material removing means including means connected to said plate for moving said plate upwardly and downwardly to thereby distort the filter; and

(h) said plate moving means including a rod having one end attached to said plate and extending transverse thereto, means coupling said rod to a motor means for raising and lowering said rod while allowing the rotation of said rod about its axis whereby said plate is raised and lowered to compress said filter element which is permitted to twist during the compression due to the rotation of said rod.

4,199,335

PROCESS FOR THE PRODUCTION OF OPTICAL FIBERS FOR TRANSMISSION OF COMMUNICATION

Georg Gliemeroth, Mainz-Finthen, and Lothar Meckel, Oestrich-Winkel, both of Fed. Rep. of Germany, assignors to Jenaer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,692
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814380
Int. Cl.[2] C03B 37/02
U.S. Cl. 65—2 15 Claims

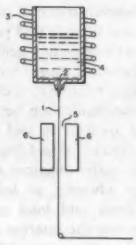
1. In a process for the production of communication fibers having transmission losses of less than 10 db/km and a pulse dispersion of less than 4 ns/km, both measured at 860 nm by the internal cladding method, wherein multiple-component glasses are deposited in layers in the glassy state in the interior of a glass tube; the tube thus clad inside, is collapsed to a rod; and the rod is drawn into a fiber, the core diameter of which has an eccentricity of lesss than 2%, the improvement wherein a precollapsing step is executed prior to the final collapsing process, the precollapsing step occurring during the internal cladding step, wherein the glass tube is precollapsed during the internal cladding step to such an extent that the ratio R_i/r_i is larger than 1.7, wherein R_i is the inner tube radius prior to the cladding step and r_i is the inner tube radius after completion of the cladding step and prior to the final collapsing step.

4,199,336

METHOD FOR MAKING BASALT GLASS CERAMIC FIBERS

Hermann L. Rittler, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,507
Int. Cl.[2] C03B 37/00, 32/00; C08L 91/00
U.S. Cl. 65—2 5 Claims



1. A method of producing glass-ceramic fibers having a diameter not greater than about 250 microns and having a fine-grained, mixed magnetite-clinopyroxene crystal phase constituting at least 35% of said fiber which comprises,

melting a raw material batch composed predominantly of a basalt-type material,

forming vitreous fibers from such melt while simultaneously, forming magnetite nuclei in the glass fibers, and

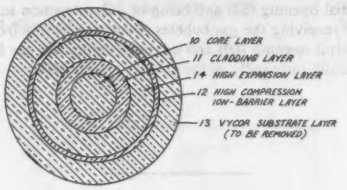
reheating said glass fibers to a temperature between 900°–1250° C. for a time not exceeding ten minutes to develop said mixed magnetite-clinopyroxene crystal phase on such nuclei.

4,199,337

METHOD OF FABRICATING HIGH STRENGTH OPTICAL PREFORMS

Adolf R. Asam, Daleville, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 6, 1978, Ser. No. 949,349
Int. Cl.[2] C03C 25/02, 15/00
U.S. Cl. 65—3 A 3 Claims


10 CORE LAYER
11 CLADDING LAYER
14 HIGH EXPANSION LAYER
12 HIGH COMPRESSION ION-BARRIER LAYER
13 VYCOR SUBSTRATE LAYER (TO BE REMOVED)

1. A method of fabricating a multilayer optical glass preform having a relatively thin outer compression layer of fused silica comprising the steps of:

depositing by chemical vapor deposition within a hollow tubular substrate tube composed of a sodium borosilicate glass, in the order named,

(a) said relatively thin compression layer of fused silica,

(b) at least one relatively thick cladding layer of doped silica glass having a relatively high coefficient to thermal expansion and a lower glass transition temperature than those of said compression layer, and

(c) a doped silicate glass core layer having a lower index of optical refraction than that of the adjacent cladding layer;

collapsing said substrate tube and enclosed layers under heat to form a solid composite preform rod;

immersing said rod in an etchant solution which dissolves said substrate glass at a rate much faster than the rate at which it dissolves said compression layer of fused silica; and

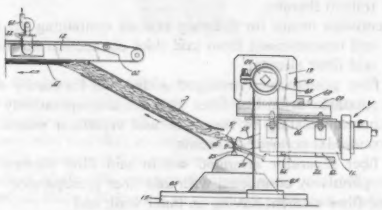
maintaining said rod in said etchant solution for a time interval just sufficient to dissolve said substrate glass completely without substantially dissolving said compression layer of fused silica.

4,199,338

CONTROLS FOR TORATION FIBERIZATION

Marcel Levecque, Birchrunville, Pa.; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 834,540, Sep. 19, 1977, Pat. No. 4,145,203, Ser. No. 762,789, Jan. 25, 1977, Pat. No. 4,102,662, and Ser. No. 676,755, Apr. 14, 1976, Pat. No. 4,118,213, said Ser. No. 762,789, and said Ser. No. 676,755, Continuation-in-part of Ser. No. 557,282, is a continuation-in-part of Ser. No. 353,984, Apr. 24, 1973, Pat. No. 3,885,940.
This application Jul. 20, 1978, Ser. No. 926,954
Int. Cl.[2] C03B 37/00
U.S. Cl. 65—16 33 Claims



21. Apparatus for forming fibers by attenuation of thermoplastic material comprising a material supply structure having

a reservoir for molten thermoplastic material, a bushing associated with said structure having orifice means for downward delivery of a series of streams of molten attenuable material from the reservoir, a generator of a gaseous blast directed in a path spaced below the bushing, a series of devices for generating a plurality of gaseous jets in side-by-side relation directed transversely into the blast to develop a series of zones of interaction of the jets in the blast, the series of streams of attenuable material being delivered into said zones of interaction, and mounting mechanism for the blast generator and for the jet devices providing for support of the blast generator and jet devices from the material supply structure, said mounting mechanism comprising cooperating journal and pivot elements one of which is suspended from the material supply structure and the other of which is connected with at least the blast generator or the jet devices to provide for pivotal adjustment movement thereof with respect to the bushing and thus with respect to the streams of attenuable material.

4,199,339

METHOD FOR THE MANUFACTURE OF A MOLDED MEMBER FROM A CERAMIC MATERIAL

Richard Grunke, Munich, Fed. Rep. of Germany, assignor to Motoren-und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,642

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737266

Int. Cl.[2] **C03B** *23/20*

U.S. Cl. 65—18 **7 Claims**

1. In a method for the manufacturing of a molded member comprising a silicon nitride material, including compressing said molded silicon nitride member within an evacuated capsule of a high temperature-resistant glass under a pressure acting thereabout until said molded member attains a non-porous condition, the improvement comprising: applying the working materials forming said glass capsule to said molded member in a non-vitrified state; and subjecting said coated member to the reaction temperature of said materials under a vacuum until there is formed a cohesive glass layer enveloping said molded member and constituting the capsule.

4,199,340

METHOD OF FORMING CORROSION-RESISTANT GLASSCERAMIC-TO-METAL SEALS

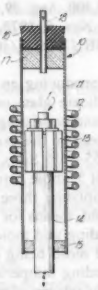
John A. Topping, Northfield, Ohio, and Peter Mayer, Burlington, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Nov. 15, 1978, Ser. No. 961,014

Claims priority, application Canada, Nov. 30, 1977, 292073/77

Int. Cl.[2] **C03B** *32/00, 23/20;* **C03C** *27/02*

U.S. Cl. 65—32 **6 Claims**



1. A method of making a hermetic plug seal having a metal pin electrode mounted by a corrosion-resistant, hermetic glass-ceramic-to-metal collar, the seal exhibiting corrosion resistance in an environment of potassium hydroxide, said method comprising the steps of:

(a) positioning a glass composition preform, said glass composition having the property of sequentially fluidizing, sealing and ceraming in a single rapid heating step, between and in proximity to the pin and the collar, within an inert atmosphere enclosure, wherein the glass composition preform consists essentially of 25.0–32.0% by weight ZnO, 2.5–10.0% by weight Al_2O_3, 30.0–60.0% by weight SiO_2, 0–10% by weight CaO, 0–14.5% by weight PbO, 0–2.5% by weight P_2O_5, 0–10.0% by weight LiO_2, 0–3.0% by weight Na_2O, 0–3.0% by weight K_2O and 0–12.5% by weight ZrO_2;

(b) rapidly heating in a single heating step the metal pin and collar to cause the glass preform to first heat, by conduction from the metal pin and the metal collar to the glass preform therebetween and radiation, to a temperature below the ceraming temperature of the glass and to fluidize the glass, so that the fluidized glass flows between and adheres to both the pin and collar to form a fluid seal therebetween, wherein the heating rate is sufficient to achieve sealing in a period of less than about 5 minutes while avoiding excessive oxidation of the metal pin and metal collar and to prevent excessive interaction of the glass composition at the glass/collar interface, and when the temperature of the glass reaches about 1000° C. ceraming of the seal occurs;

(c) maintaining the temperature at about 1000° C. for about 3.5 to 12 minutes to effect ceraming of the seal; and thereafter

(d) cooling the resulting plug seal within the inert atmosphere enclosure to room temperature.

4. A method of making a hermetic plug seal for use in a Ni-Cd battery, the seal having a metal pin electrode mounted in and surrounded by a corrosion-resistant, hermetic glass-ceramic-to-metal seal in a surrounding metal collar, the seal exhibiting corrosion resistance under an environment of potassium hydroxide, said method including the successive steps of:

(a) positioning a glass composition preform about said metal pin electrode and within said surrounding metal collar, said glass composition preform consisting essentially of, in percent by weight:

ZnO: 25.0–32.0%
Al_2O_3: 2.5–10.0%
SiO_2: 30.0–60.0%
CaO: 0–10%
PbO: 0–14.5%
P_2O_5: 0–2.5%
LiO_2: 0–10%
Na_2O: 0–3%
K_2O: 0–3%
Zr_2O: 0–12.5%,

said glass composition capable of sequentially fluidizing, sealing and ceraming in a single rapid heating step;

(b) rapidly heating by R.F. induction in an inert atmosphere said metal pin electrode, glass preform and surrounding metal collar in a single heating step to a temperature initially below the ceraming temperature of the glass to sequentially fluidize, seal then ceram the glass preform, such that (i) the fluidized glass flows between and adheres to the electrode pin and surrounding collar to form a fluid seal therebetween while avoiding excessive oxidation of the metal pin and metal collar and to prevent excessive interaction of the glass composition at the glass/collar interface, the rate of heating sufficient to achieve sealing in a period of less than about 5 minutes, and (ii) ceraming of the seal occurs when the temperature of the glass reaches about 1000° C.;

(c) maintaining the temperature at about 1000° C. for a period of about 3.5 to about 12 minutes to effect ceraming of the seal; and thereafter

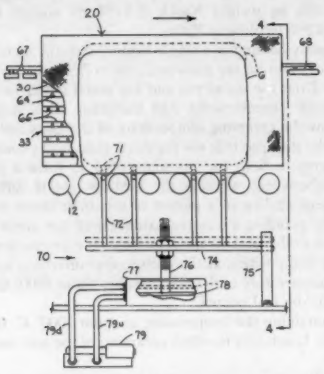
(d) cooling the resulting hermetic plug seal in said inert atmosphere to room temperature.

4,199,341

GLASS LIFT MECHANISM FOR AND METHOD OF PRESS BENDING GLASS SHEETS

Joseph R. Petrella, Culver City, Calif., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 14, 1978, Ser. No. 942,207
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—104 **6 Claims**



1. A method of shaping glass sheets comprising:

heating a glass sheet in an upright position while the bottom edge of the glass sheet rests directly on first horizontally extending conveyor means;

conveying the glass sheet onto second horizontally extending conveyor means, which extends from the first conveyor means and is comprised of conveyor rolls, and into a shaping station, and stopping the glass sheet in the shaping station in an upright position with its bottom edge resting directly on the conveyor rolls and between a pair of opposed, complementary press bending molds spaced above the conveyor rolls a distance sufficient to provide clearance between the bottom edges of the bending molds and the tops of the conveyor rolls, each bending mold having a surface area at least equal to that of the glass sheet;

raising lifting fingers between the conveyor rolls into contact with the bottom edge of the glass sheet and raising the glass sheet on the lifting fingers to bring the bottom of the glass sheet to an elevation at least equal to the elevation of the bottom edges of the bending molds;

advancing the bending molds toward each other to engage the glass sheet on both sides throughout essentially the entire area of the glass sheet and to bend the glass sheet therebetween;

lowering the lifting fingers between the conveyor rolls and separating the bending molds, so that the bottom edge of the glass sheet again directly contacts the conveyor rolls; and

conveying the glass sheet out of the shaping station.

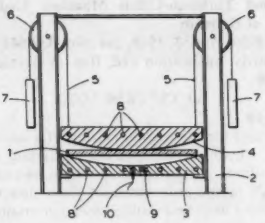
4. An apparatus for shaping glass sheets by press bending comprising: a tunnel-type furnace, a shaping station, horizontally extending conveyor means for conveying a series of glass sheets in an upright position through the furnace and the shaping station, the portion of the conveyor means in the shaping station comprising conveyor rolls adapted to directly support the bottom edge of each glass sheet, a pair of glass shaping molds having opposed, complementary shaping surfaces, the bottom edges of the shaping molds being spaced above the tops of the conveyor rolls in the shaping station a distance sufficient to provide clearance therebetween, means to horizontally reciprocate the shaping molds so as to press bend an upright glass sheet received therebetween, a plurality of lifting fingers located between conveyor rolls beneath the shaping molds and adapted to engage the bottom edge of a glass sheet, means for vertically reciprocating the lifting fingers between a retracted position below the line of support of the bottom edge of a glass sheet on the conveyor rolls and a raised position in which the uppermost extent of the lifting fingers is at least equal to the elevation of the lower edge of the shaping molds, whereby essentially the entire area of each glass sheet may be engaged by the shaping surfaces of the shaping molds.

4,199,342

PROCESS OF IMPARTING A PERMANENT CURVATURE TO A SHEET OF GLASS

Pierre Mestre, and Henri Prevost, both of Maubeuge, France, assignors to BFG Glassgroup, Paris, France

Filed Dec. 7, 1978, Ser. No. 967,867
Claims priority, application United Kingdom, Dec. 30, 1977, 54343/77
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—106 **14 Claims**



1. A process of imparting a permanent curvature to a sheet of glass by subjecting the sheet to bending forces between pre-heated forming dies having complementary curved surfaces, characterised in inserting the sheet in untempered condition between the pre-heated dies while its temperature prior to its insertion does not exceed 250° C. and is less than the temperature of the dies whereby heat is transferred from the dies to the sheet, closing the dies while a transitory thermal stress gradient exists in the thickness of the sheet due at least in part to heat transfer from such dies and opening the dies after at least partial relief of the bending stresses.

4,199,343

MIXING AND INJECTION MOLDING HYDROSILICATES

Robert W. Eolin, Corning; Gordon F. Foster, Campbell; Joseph F. Mach, and Richard O. Maschmeyer, both of Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

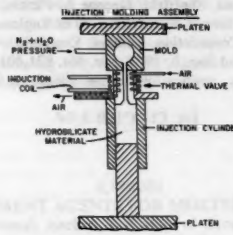
Division of Ser. No. 828,300, Aug. 29, 1977, Pat. No. 4,132,538.
This application Nov. 6, 1978, Ser. No. 958,196
Int. Cl.[2] C03B *17/00, 5/30;* A01J *21/00*
U.S. Cl. 65—157 **4 Claims**

1. An apparatus for producing an injection molded article composed of a hydrosilicate glass containing between about 1–50% by weight H_2O and consisting essentially, on the anhydrous basis in mole percent on the oxide basis, of about 3–25% Na_2O and/or K_2O and 55–95% SiO_2, the sum of those components constituting at least 55 mole percent of the total composition, said apparatus comprising three fundamental elements:

(a) a pressurizable mold, means for heating and cooling said mold, means for sealing said mold, means for pressurizing said mold, and said mold being constructed of materials capable of withstanding temperatures up to 550° C. and demonstrating ready release of said hydrosilicate glass;

(b) an injection cylinder for holding said hydrosilicate glass when said glass is at a temperature of about 100°–550° C. and a viscosity of about 10^2–10^9 poises, said injection

cylinder having means for injecting said glass through a thermal valve into said mold from said injection chamber such that said injection cylinder performs as a pump, means for sealing the chamber of said injection cylinder and for pressurizing said chamber with an inert gas or



steam at or above the equilibrium vapor pressure of said glass; and

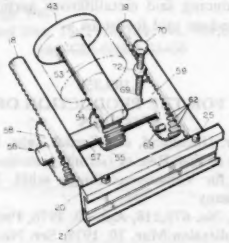
(c) a thermal valve connecting said mold with said injection cylinder, means for heating and cooling said valve, and said valve being constructed of materials capable of withstanding temperatures up to 550° C.

4,199,344

90° SWEEPOUT CYLINDER WITH ADJUSTABLE STROKE

Eustace H. Mumford, Ottawa Lake, Mich., and Jack I. Perry, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 15, 1978, Ser. No. 942,585
Int. Cl.[2] C03B *9/04;* B65G *47/00*
U.S. Cl. 65—260 **9 Claims**



1. In a 90° sweepout mechanism for moving newly formed glass containers from a cooling dead plate to a moving machine conveyor wherein a sweepout head including ware-contacting fingers that are extended and retracted in a predetermined cycle is oscillated through a 90° arc, the improvement in the sweepout head finger-extending and retracting mechanism comprising:

a horizontal cylinder mounted on the upper end of an oscillating plate;

a piston moveable in said cylinder;

a piston rod extending out one end of said cylinder and having a rack portion formed along one side thereof;

a first pinion in engagement with said rack portion;

a generally horizontal shaft extending through and supporting said first pinion;

a pair of second pinions on said horizontal shaft at opposite sides of said first pinion;

said second pinions being of greater diameter than said first pinion;

a pair of horizontal racks respectively in engagement with said second pinions;

housing means supporting said racks for horizontal reciprocation in said head;

a finger-carrying bar connected to and spanning the gap between the ends of said pair of horizontal racks, whereby movement of said piston results in movement of said racks at a greater velocity and for a greater distance than said piston.

5. In a 90° sweepout mechanism for moving newly formed glass containers from a cooling dead plate to a moving machine conveyor wherein a sweepout head including ware-contacting fingers that are extended and retracted in a predetermined cycle is oscillated through a 90° arc, the improvement in the oscillated sweepout head comprising:

a horizontal cylinder;

a piston moveable in said cylinder;

a piston rod extending out one end of said cylinder;

a rack portion formed along one side of said piston rod;

a rotatable gear cluster mounted in said head in engagement with said rack portion;

a pair of horizontal racks respectively in engagement with said gear cluster;

housing means in said head for supporting said pair of racks for horizontal reciprocation; and

a finger-carrying bar connected to and spanning the gap between the ends of said pair of racks, whereby movement of said piston rotates said gear cluster resulting in movement of said racks.

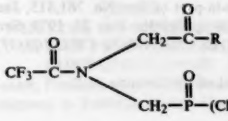
4,199,345

DERIVATIVES OF N-TRIFLUOROACETYL-N-PHOSPHONOMETHYLGLYCINE DICHLORIDE

John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 894,070, Apr. 6, 1978, abandoned. This application Oct. 25, 1978, Ser. No. 954,276
Int. Cl.[2] A01N *9/36;* C07C *101/06*
U.S. Cl. 71—86 **15 Claims**

1. A compound of the formula



wherein R is chlorine, an alkoxy group containing from 1 to 10 carbon atoms, an alkoxyalkoxy group containing from 3 to 6 carbon atoms, an alkoxyalkoxyalkoxy group containing from 5 to 9 carbon atoms or a chloro lower alkoxy group.

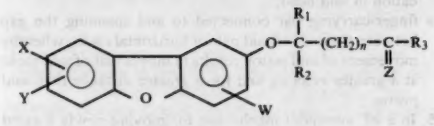
4,199,346

HERBICIDES BASED ON 2-DIBENZOFURANYLOXYALKANECARBOXYLIC ACID DERIVATIVES

John C. Saukaitis, Warwick, R.I., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Sep. 18, 1978, Ser. No. 943,603
Int. Cl.[2] A01N *9/22*
U.S. Cl. 71—88 **7 Claims**

1. A method for controlling the development of weeds in plants and legumes comprising applying to said plants and legumes or to soil in which said plants and legumes are grown, an effective amount of a herbicidal composition containing, as a herbicidally active ingredient, a compound having the formula:



wherein:

X, Y and W are selected from the group consisting of hydrogen, halogen, (C_1-C_6) alkyl, (C_1-C_6) alkoxy, nitro, (C_1-C_4) haloalkyl, (C_1-C_4)-alkoxy-(C_1-C_4)-alkyl;

R_1 and R_2 are selected from the group consisting of hydrogen and (C_1-C_4) alkyl;

Z is selected from the group consisting of oxygen and sulphur;

R_3 is selected from the group consisting of hydroxy; (C_1-C_9)-alkoxy wherein the alkoxy group may be substituted by from 1 to 3 of the following groups: halogen, trifluoromethyl, hydroxy, or (C_1-C_4)-alkoxy; (C_2-C_8)-alkoxyalkoxy; (C_1-C_4)-alkylthio; (C_2-C_4) alkenyloxy; cyclohexyloxy which may be substituted by a methyl group; phenoxy which may be substituted by 1–3 of the following groups: halogen, methyl, nitro,2,4-dichlorophenoxy or methoxy; benzyloxy; amino; (C_1-C_4)-alkylamino which may be substituted by a carboxy group; di-(C_1-C_4)-alkylamino; hydrazino; N',N'-di-(C_1-C_4)-alkylhydrazino; anilino or pyridylamino, the phenyl or pyridylamino group of which may be substituted by 1–3 of the following groups: halogen, nitro, (C_1-C_2) alkoxy, (C_1-C_2) alkyl, hydroxy, 2,4-dichlorophenoxy or trifluoromethyl; (C_1-C_4) alkylamino; (C_1-C_4)-dialkylamino; aminotriazole; ethylene-urea; and an OM group where M is an inorganic cation or an organic base catic n; and

n is 0–3.

4,199,347

CYCLOALKANECARBOXANILIDE DERIVATIVE HERBICIDES

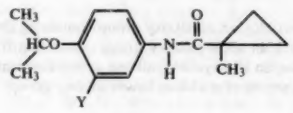
Kurt H. G. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 876,595, Feb. 10, 1978, which is a continuation-in-part of Ser. No. 761,515, Jan. 21, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,642

Int. Cl.² A01N *9/20*; C07C *103/37*

U.S. Cl. 71—118 **4 Claims**

1. A compound of the formula



wherein Y is methyl or ethyl.

4. A method for controlling undesirable plant growth at a locus to be protected which comprises applying to the locus to be protected a herbicidally effective amount of a compound according to claim 1 or a composition thereof.

4,199,348

MINERAL ORE PELLETS

Ernest R. Ground, Coahuila, Mexico, assignor to International Minerals & Chemical Corporation, Northbrook, Ill.

Filed Jun. 7, 1978, Ser. No. 913,722

Int. Cl.² C22B *1/08*

U.S. Cl. 75—3 **8 Claims**

1. A mineral ore pellet substantially devoid of uncombined water, comprising particulate mineral ore and a binding amount of an alkali metal carbonate, said carbonate being present in a concentration of from about 0.5 wt.% to about 15 wt.% of the dry pellet.

4,199,349

PRODUCTION OF SPONGE IRON

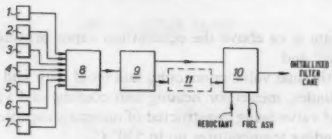
Jonathan R. Wood, Sheffield; George A. Pickin, Guisborough, and David S. Harvey, Rotherham, all of England, assignors to British Steel Corporation, London, England

Filed Sep. 8, 1977, Ser. No. 831,401

Claims priority, application United Kingdom, Sep. 13, 1976, 37790/76

Int. Cl.² C21B *3/04*

U.S. Cl. 75—29 **12 Claims**



1. A process for producing feedstock of highly metallized reduced metal which comprises the steps of preparing a slurry of metalliferous particles, subjecting the slurry to high pressure filtration at a pressure of at least about 200 p.s.i. to produce a filter cake of said metalliferous particles, breaking up said filter cake into pieces, adding a reductant to said filter cake pieces, feeding the filter cake pieces together with said reductant into a kiln, and reducing said metalliferous particles in said kiln whereby to produce said feedstock.

4,199,350

METHOD FOR THE PRODUCTION OF QUALITY STEELS

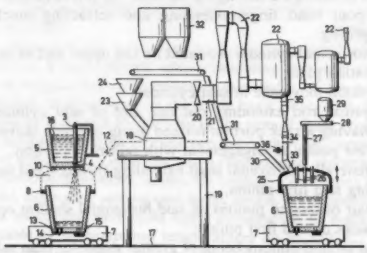
Horst Kutscher, Dortmund, and Gernot Zahs, Dortmund-Lichtendorf, both of Fed. Rep. of Germany, assignors to Vacmetal Gesellschaft fur Vakuummetallurgie mbH, Dortmund, Fed. Rep. of Germany

Division of Ser. No. 679,118, Apr. 20, 1976, Pat. No. 4,094,495. This application Mar. 10, 1978, Ser. No. 885,412

Claims priority, application Fed. Rep. of Germany, May 17, 1975, 2522194

Int. Cl.² C21C *7/00*

U.S. Cl. 75—46 **16 Claims**



1. A process for the manufacture of high quality steels with analyses within a very close range of tolerances from solid raw

materials including the smelting, refining and alloying of steel melts comprising:

melting down each of the solid raw materials utilized in the process in a first vessel;

at least partially refining the resulting melt while it is in said first vessel and under a slag;

tapping said melt and slag into a second vessel;

deslagging said melt by discharging said melt from said second vessel into a third vessel without said slag; and

thereafter alloying and desulfurizing said melt to produce the desired high quality steel.

4,199,351

TREATMENT AGENTS FOR MOLTEN METALS

Tarek El Gammal, Aachen, Fed. Rep. of Germany, assignor to Foseco Trading A.G., Chur, Switzerland

Filed Jul. 10, 1978, Ser. No. 923,279

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731857

Int. Cl.² C21C *7/00*; C22C *33/08*

U.S. Cl. 75—53 **10 Claims**

1. A body for introducing a treatment agent into a metal melt, said body comprising a volatile treatment agent dispersed in a matrix comprising refractory, heat-insulating material, a particulate metallic material of high thermal conductivity and a binder.

4,199,352

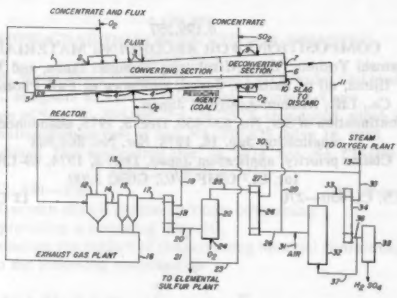
AUTOGENOUS PROCESS FOR CONVERSION OF METAL SULFIDE CONCENTRATES

Louis H. Jaquay, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Dec. 15, 1978, Ser. No. 969,694

Int. Cl.² C22B *15/00*

U.S. Cl. 75—74 **11 Claims**



1. In a continuous, autogeneous process for recovering metal values from nonferrous metal sulfide concentrates wherein a molten bath comprising a metal rich phase and a slag phase is established and maintained beneath a sulfur dioxide containing gaseous phase in a sealed furnace and wherein value metal-rich material, slag and sulfur dioxide containing off-gases having dust entrained therein are separately removed and where oxygen and a protective fluid are introduced directly into the molten bath, the improvement wherein said protective fluid comprises sulfur trioxide such that subsequent removal of said dust from the off-gases is facilitated while contamination of said off-gases with fluids other than sulfur dioxide is minimized.

4,199,353

MOLTEN METAL TREATMENT

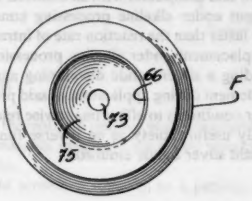
Kirk D. Miller, Rexdale; John B. Flood, Willowdale; George Dimou, Toronto; Frederick E. Kara, Islington, and Richard W. Amos, Etobicoke, all of Canada, assignors to Canron Inc., Montreal, Canada

Filed Jun. 13, 1977, Ser. No. 806,094

Claims priority, application Canada, Jan. 18, 1977, 269973

Int. Cl.² C22B *9/00*; C21C *7/00*

U.S. Cl. 75—130 R **5 Claims**



1. A self-contained capsule for immersion to a treating position in a molten metal while containing a vaporizable additive for reaction therewith, comprising,

a substantially cylindrical enclosure having a sidewall and bottom wall of heat-resistant non-metallic non-wetting material non-consumable in the reaction, defining an addition-receiving chamber,

the sidewall extending upwardly from the bottom wall and being provided with a single restricted access passage through which the chamber may be charged and which permits controlled escape of reaction products,

the bottom wall being provided with a single central restricted passage which permits controlled escape of reaction products, and an inside surface sloping toward the central passage to provide an effective drainage slope,

the sidewall having a terminal internally threaded collar part defining a top opening for connectably receiving the threaded end of a closure member forming part of a plunging assembly.

4,199,354

POSITIVE-WORKING IMMOBILE PHOTOGRAPHIC COMPOUNDS AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

Jerald C. Hinshaw, Penfield, and Paul B. Condit, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 326,628, Jan. 26, 1973, abandoned. This application Dec. 20, 1974, Ser. No. 534,966

Int. Cl.² G03C *1/40, 5/54, 1/48, 1/10*

U.S. Cl. 430—226 **73 Claims**

41. A process of forming an image record in a photographic element comprising (1) applying an alkaline processing composition to an imagewise-exposed photographic element comprising a support having thereon at least one layer containing a silver halide emulsion having associated therewith a ballasted immobile compound comprising a diffusible photographically useful moiety which is an image dye-providing material or a photographic reagent, said compound containing (a) an oxidizable nucleophilic group or a precursor for an oxidizable nucleophilic group and (b) an electrophilic cleavage group, which contains an electrophilic group and a leaving group which can be displaced under alkaline conditions by said nucleophilic group, linking said photographically useful moiety to a group which is a ballast rendering said compound immobile under alkaline processing conditions in said element, said nucleophilic group being located in said compound relative to said electrophilic cleavage group to provide for intramolecular nucleophilic displacement of said leaving group from said electrophilic group under alkaline conditions cleaving said

photographically useful moiety from said ballast group, said nucleophilic group and said electrophilic group are each attached to an aromatic ring and contain from 1–5 atoms between the nucleophilic center of said nucleophilic group and the electrophilic center of said electrophilic group, whereby said compound is capable of forming a ring having from 3–7 atoms therein by intramolecular nucleophilic displacement, said compound upon oxidation of said nucleophilic group having a substantially lower rate of release of said photographically useful moiety in an alkaline medium, and the rate of reaction of said compound with an oxidized silver halide developing agent under alkaline processing conditions being substantially faster than the reaction rate of intramolecular nucleophilic displacement under alkaline processing conditions, and (2) providing a silver halide developing agent in said photographic element during application of said processing composition under conditions to effect imagewise release of said photographically useful moiety as an inverse function of development of said silver halide emulsion.

4,199,355

POSITIVE-WORKING IMMOBILE PHOTOGRAPHIC COMPOUNDS AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

Jerald C. Hinshaw, Penfield, and Paul B. Condit, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1975, Ser. No. 589,977
Int. Cl.[2] G03C *5/54, 1/40, 1/76, 1/10*
U.S. Cl. 430—226 **47 Claims**

9. A photographic element comprising a support having thereon at least three separate superposed layers each containing a silver halide emulsion and each having associated therewith an immobile compound containing a photographically useful group which is an image dye or image- dye precursor, each said compound containing (a) at least two oxidizable nucleophilic groups or precursors for oxidizable nucleophilic groups and (b) at least two electrophilic cleavage groups, each of which contains an electrophilic group and a leaving group which can be displaced by one of said nucleophilic groups under alkaline conditions, linking said photographically useful moiety to separate groups which are each a ballast rendering said compound immobile under alkaline processing conditions in said element and each ballast being capable of substantially immobilizing said photographically useful moiety after the cleavage of said other ballast groups, said nucleophilic groups being located in said compound relative to each said electrophilic cleavage group to provide for intramolecular nucleophilic displacement of said leaving group from said electrophilic group cleaving said photographically useful moiety from said ballast groups under said alkaline conditions, said nucleophilic group and said electrophilic group are each attached to an aromatic ring and contain from 1-5 atoms between the nucleophilic center of said nucleophilic group and the electrophilic center of said electrophilic group, whereby said compound is capable of forming a ring having from 3-7 atoms therein by intramolecular nucleophilic displacement, and said compound upon oxidation of one of said nucleophilic groups having a substantially lower rate of release of said photographically useful moiety under said alkaline conditions, and wherein said immobile compounds have a rate of release of said photographically useful group which is less than the rate of reaction with oxidized silver halide developer but is faster than the rate of substantial fog development in the initially undeveloped areas of said silver halide emulsions.

4,199,356

ELECTROPHOTOGRAPHIC PROCESS, OF TRANSFERRING A MAGNETIC TONER TO A COPY MEMBER HAVING AT LEAST 3×10^{13} OHM-CM RESISTANCE

Shoji Matsumoto, Neyagawa; Hitoshi Nishihama, Hirakata, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Jan. 27, 1975, Ser. No. 544,502
Claims priority, application Japan, Feb. 1, 1974, 49-13929
Int. Cl.[2] G03G *13/16*
U.S. Cl. 430—126 **8 Claims**

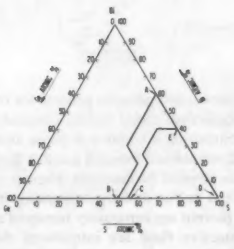
1. An electrophotographic process comprising the steps of charging a photoconductive layer of an electrophotographic recording material and exposing the charged photoconductive layer imagewise to light to thereby form an electrostatic latent image corresponding to the light image, contacting the photoconductive layer carrying thereon the so formed electrostatic latent image with a magnetic brush composed of a conductive or semiconductive magnetic toner to thereby form on the photoconductive layer a toner image corresponding to the electrostatic latent image, and contacting the photoconductive layer carrying the so formed toner image thereon with a transfer sheet to thereby transfer electrostatically the image of the conductive or semiconductive toner to the transfer sheet, wherein the said conductive or semiconductive magnetic toner has a specific resistance ranging from about 10^3 to about 10^{10} ohm-cm, said transfer sheet comprises a paper substrate and a toner-receiving face layer of at least one medium selected from the group consisting of resins, waxes and oils, each having a volume specific resistance of at least 3×10^{13} Ω-cm, said toner-receiving face layer being formed by applying said medium on the paper substrate in an amount of 0.3 to 50 g/m^2, and the transfer of the toner image to said toner-receiving face layer is accomplished by application of a voltage to the back face of the transfer sheet by corona discharge without substantial broadening of contours.

4,199,357

COMPOSITIONS FOR RECORDING MATERIALS

Satoshi Yoshida; Yuzo Mizobuchi; Tomoaki Ikeda, and Toshio Iijima, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation of Ser. No. 637,430, Dec. 3, 1975, abandoned. This application Jan. 16, 1978, Ser. No. 869,963
Claims priority, application Japan, Dec. 3, 1974, 49-139841
Int. Cl.[2] G03F *7/02*; G03C *1/00*
U.S. Cl. 430—270 **12 Claims**



1. A composition for making a lithographic printing plate capable of recording by imagewise exposure to light which contains a bismuth-germanium-sulfur series material containing at least 40 atomic % sulfur.

4,199,358

METHOD OF MAKING DECORATIVE PANELS

Robert C. Parsons, 8003 Inwood Rd., Dallas, Tex. 75209

Division of Ser. No. 841,454, Oct. 12, 1977, Pat. No. 4,133,919, which is a division of Ser. No. 677,363, Apr. 15, 1976, Pat. No. 4,093,754. This application Aug. 24, 1978, Ser. No. 936,344

Int. Cl.[2] G03C 5/00; B05D 5/00

U.S. Cl. 430—308 2 Claims

1. A method of making decorative panels comprising:
covering a screen with a photosensitive emulsion;
photographically exposing the photosensitive emulsion on the screen with a predetermined image;
developing the exposed photosensitive emulsion such that portions of the screen corresponding to the image photographically exposed on the screen permits the passage of liquid therethrough;
directing a liquid asphaltum masking material through the screen onto a mirror forming layer on a surface of a plastic panel and thereby applying the liquid asphaltum masking material in accordance with a high degree of resolution of the predetermined pattern;
curing the liquid asphaltum masking material and thereby forming a solid asphaltum masking layer on the mirror forming layer on the surface of the plastic panel in accordance with a high degree of resolution of the predetermined pattern; and
subsequently dissolving the portions of the mirror forming layer on the surface of the plastic panel corresponding to the unmasked areas and thereby providing a plastic panel comprising mirrored and nonmirrored areas corresponding to a high degree of resolution of the predetermined pattern.

4,199,359

PHOTOGRAPHIC SCREEN STENCIL PRINTING PROCESS

John W. Weigl, West Webster, N.Y., and Carl Brynko, Oakland, N.J., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 383,006, Jul. 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 729,525, May 16, 1968, abandoned. This application Dec. 16, 1974, Ser. No. 533,034

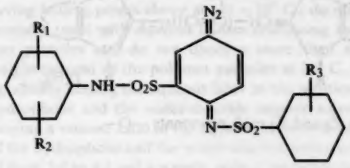
Int. Cl.[2] G03F 7/12

U.S. Cl. 430—308 16 Claims

1. A screen stencil printing process comprising:
(a) providing a screening material,
(b) coating the surface of the screening material conforming to the following specification

$$S \cong \Delta_o/(1-\Delta_o)$$

wherein
S is the fractional increase in linear dimension (thickness) of the screen fibers due to photoselective swelling,
Δ_o is the initial fractional open area of the screen as manufactured and coated,
with a photosensitive material such that open areas are provided for expansion of said material into said open areas, said open areas of said screen being located between the coated screen fibers, said photosensitive material being capable of swelling upon exposure to actinic radiation and heat and being selected from the group consisting of photochromic compound-resin mixtures, diazo compound-resin mixtures, resin mixtures with a compound selected from the group consisting of p-azido-benzophenone, 4,4'-diazodobenzophenone, p-quinone diazides and a compound satisfying the formula



wherein
$R_1 = R_2 =$ ethyl
$R_3 = Br$
and mixtures thereof, the ratio of said compound material to said resin material ranging from 4:1 by weight to about 1:20 by weight;
(c) exposing said screening material to a pattern of actinic radiation;
(d) heating said screening causing the photosensitive material to expand, thereby closing the open areas of the screen in the illuminated areas;
(e) allowing said screening to cool;
(f) contacting said screening with the surface to be marked;
(g) forcing a marking material through the open areas of said screening;
(h) lifting said screening from the marked surface; and
(i) allowing said surface to dry.

4,199,360

METHOD FOR SPECTRALLY SENSITIZING PHOTOGRAPHIC LIGHT-SENSITIVE EMULSIONS

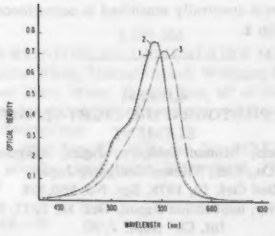
Masanao Hinata; Yuji Mihara; Tadao Shishido, and Keiichi Adachi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 765,314, Feb. 3, 1977, Pat. No. 4,138,266, which is a continuation-in-part of Ser. No. 644,004, Dec. 24, 1975, abandoned. This application Jul. 21, 1978, Ser. No. 926,769

Claims priority, application Japan, Dec. 24, 1974, 50-946; Fed. Rep. of Germany, Dec. 22, 1975, 2557916; United Kingdom, Dec. 24, 1975, 52862/75

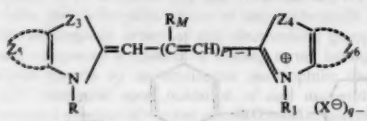
Int. Cl.[2] G03C 1/76, 1/10, 1/14, 1/19

U.S. Cl. 430—503 12 Claims



1. A method of spectrally sensitizing a photographic light-sensitive emulsion which comprises adding thereto an aqueous solution of a sulfo-substituted cyanine dye represented by the following general formula (VI')

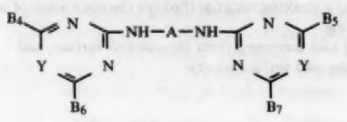
(VI')



wherein Z_3 and Z_4 each represents —O—,

—S— or —Se—, wherein R_0 represents an alkyl group or a substituted alkyl group; Z_5 and Z_6 each represents an atomic group necessary to form a benzene ring or a naphthalene ring; R_M represents a hydrogen atom, an alkyl group, an aryl group, or a substituted aryl group; R and R_1 each represents an alkyl group or an aryl group, with either R or R_1 representing a sulfo group-containing alkyl group; p_1 represents 1 or 2; q represents 1 or 2; X represents an inorganic acid anion or an organic acid anion; and a Red Shift Compound represented by the following general formula (IV)

(IV)



wherein —A— is a divalent aromatic residue; Y is =CH—, $=CB_8$— or =N—, wherein B_8 is an alkyl group or a halogen atom; and B_4, B_5, B_6 and B_7 each represents a hydrogen atom, a hydroxy group, an alkoxy group, an alkyl group, an arylalkoxy group, a halogen atom, a heterocyclic nucleus, an alkylthio group, a heterocyclothio group, an arylthio group, an amino group, an arylamino group, a heterocycloamino group, an aryl group or a mercapto group, wherein B_4, B_5, B_6 and B_7 may each be the same as or different from each other and wherein when —A— does not contain a sulfo group, at least one of B_4, B_5, B_6 and B_7 comprises at least one sulfo group where the molar ratio of the amount of said sulfo-substituted cyanine dye represented by the general formula, (VI') to the amount of said Red Shift Compound represented by the general formula (IV) ranges from about 1:1 to about 1:2.

5. A multi-layered color photographic light-sensitive material comprising at least a support, a blue-sensitive silver halide emulsion layer coated on the support, a green-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer, characterized in that at least one of said silver halide emulsion layers is spectrally sensitized in accordance with the method of claim 1.

4,199,361

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT

Nobuo Furutachi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

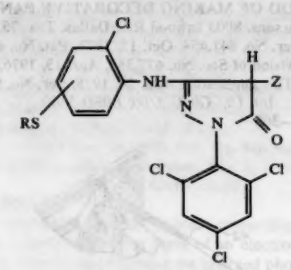
Filed Oct. 10, 1978, Ser. No. 950,118

Claims priority, application Japan, Oct. 14, 1977, 52/122500

Int. Cl.[2] G03C *1/40*

U.S. Cl. 430—508 **11 Claims**

1. A color photographic light-sensitive element comprising a support having thereon a silver halide emulsion layer containing therein a 3-anilino-5-pyrazolone magenta color-forming coupler represented by the following general formula



wherein R represents an aliphatic hydrocarbon group having up to about 35 carbon atoms, a heterocyclic group having up to 22 carbon atoms or an aromatic group having up to 22 carbon atoms; and Z represents a hydrogen atom or a group which is eliminated on coupling by the oxidation product of an aromatic primary amine developing agent; and the RS group is present at the 4- or 5-position of the anilino group.

4,199,362

COLOR DIFFUSION TRANSFER PROCESS PHOTOGRAPHIC ELEMENTS

Takashi Yoshida; Shinji Sakaguchi; Kazunobu Katoh, and Yukio Karino, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 12, 1977, Ser. No. 859,636

Claims priority, application Japan, Dec. 10, 1976, 51-148589

Int. Cl.[2] G03C *1/40, 5/54, 1/48*; B44D *1/09*

U.S. Cl. 430—218 **57 Claims**

1. In a supported light sensitive or light-insensitive photographic element for the color diffusion transfer process including a neutralizing system for reducing the pH of an aqueous alkaline processing solution which comprises a neutralizing layer and a timing layer, wherein the timing layer is positioned on or under the neutralizing layer in direct or indirect contact therewith in such a relationship that the aqueous alkaline processing solution reaches the neutralizing layer through the timing layer, the improvement which comprises the timing layer, wherein said light sensitive photographic element comprises a support having thereon at least on silver halide photographic emulsion layer having associated therewith a dye image forming material, said timing layer consisting essentially of a water permeable polymer latex which is produced by emulsion polymerization of (1) each of (A) at least one monomer selected from the group consisting of ethylene-type monomers having at least a free carboxylic acid group, a free sulfonic acid group or a free phosphoric acid group or a salt thereof and (B) at least one monomer selected from the group consisting of monomers represented by the following general formula (I)

wherein X is a hydrogen atom, a methyl group or a $—COOR^1$ group; Y is a hydrogen atom, a methyl group or a $—(CH_2)_n COOR^2$ group; Z is an aryl group, a $—COOR^3$ group or a

group; R^1, R^2 and R^3, which may be the same or different, each represents an aliphatic group or an aryl group; and n is an integer of 0 to 3, or (2) each of (A) at least one monomer

selected from the group consisting of the ethylene monomers described above, (B) at least one monomer selected from the group consisting of monomers represented by the general formula (I) above, and (C) at least one monomer selected from the group consisting of monofunctional or polyfunctional unsaturated monomers other than those monomers described in (A) and (B) above which are copolymerizable with the monomers described in (A) and (B) above and selected from the group consisting of acrylamides, methacrylamides, vinyl ethers, vinyl ketones, allyl compounds, olefins, vinyl heterocyclic compounds, unsaturated nitriles and other different polyfunctional monomers.

4,199,363

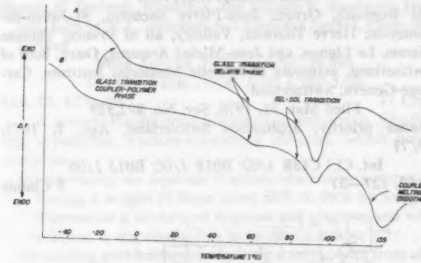
PROCESSES FOR ACHIEVING UNIFORM, EFFICIENT DISTRIBUTION OF HYDROPHOBIC MATERIALS THROUGH HYDROPHILIC COLLOID LAYERS AND LOADED LATEX COMPOSITIONS

Tsang J. Chen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 778,184, Mar. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 653,816, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 575,689, May 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 506,919, Sep. 17, 1974, abandoned, said Ser. No. 778,184, is a continuation-in-part of Ser. No. 744,842, Nov. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 653,816,. This application Nov. 3, 1978, Ser. No. 956,943

Int. Cl.[2] G03C *1/84, 1/10, 1/40*

U.S. Cl. 430—512 **90 Claims**



1. A process of preparing a polymeric latex composition comprising

(1) providing an aqueous latex consisting essentially of water as a continuous phase and from 0.1 to 20 percent by weight, based on total weight of the latex, of polymer particles of from 0.02 to 0.2 micron in average diameter as a dispersed phase, the polymer particles being chosen from among those which, at 25° C.,

(a) are capable of forming a latex with water at a polymer particle concentration of from 10 to 20 weight percent, based on total weight of the latex,

(b) exhibit no observable coagulation of the polymer particles when 100 ml of the latex is then mixed with an equal volume of a water-miscible organic solvent, stirred and allowed to stand for 10 minutes, and

(c) contain from 2 to 25 percent by weight repeating units derived from hydrophilic ethenic monomers having a molecular weight at most of about 300, the monomers being capable of forming water-soluble homopolymers,

(2) providing a solution consisting essentially of a hydrophobe having a solubility in distilled water at 25° C. of less than 0.5 percent, based on the weight of the water, dissolved in the water-miscible organic solvent in a concentration of from 0.1 to 20 percent by weight, based on total weight of the solution, wherein the hydrophobe is chosen from among substantially water-insoluble, oleophilic photographic addenda of the type incorporated in imaging and associated hydrophilic colloid coating layers of silver halide photographic elements and the water-miscible organic solvent is selected from those which can be dissolved in distilled water at 20° C. to the extent of at least about 20 parts by volume in 80 parts by volume of water, having boiling points above about −10° C., do not detrimentally react with aqueous latexes containing the polymer particles and do not dissolve more than about 5 weight percent of the polymer particles at 20° C.,

(3) gradually adding the aqueous latex to the solution of the hydrophobe and the water-miscible organic solvent employing a volume ratio of the aqueous latex to the solution of the hydrophobe and the water-miscible organic solvent of from 1:4 to 4:1 and a weight ratio of hydrophobe to the polymer particles of from 1:40 to 3:1 while retaining the hydrophobe in solution and the polymer particles dispersed so that (a) the hydrophobe and the polymer particles are brought into intimate association and (b) the water-miscible organic solvent is diluted with water to reduce the solubility of the hydrophobe in the resulting continuous phase and thereby drive the equilibrium distribution of the hydrophobe away from the resulting continuous phase toward the polymer particles of the dispersed phase, with the result being the loading of the dissolved hydrophobe into the polymer particles.

4,199,364

GLASS COMPOSITION

Homer E. Neely, Tarentum, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 6, 1978, Ser. No. 958,307

Int. Cl.[2] C03C *13/00, 3/04*

U.S. Cl. 106—50 **8 Claims**

1. A boron-free glass fiber consisting essentially of 55–61 percent SiO_2, 12 to 18 percent Al_2O_3, 4 to 10 percent MgO, 14 to 18 percent CaO, 0.1 to 1.5 percent Na_2O, 0.1 to 1.5 percent Li_2O, all percents being by weight of the composition.

4,199,365

FOUNDRY COMPOSITIONS CONTAINING PROPYLENE GLYCOL MONOACETATE

George C. W. Randall, Carshalton, England, assignor to BP Chemicals Limited, London, England

Filed Oct. 27, 1978, Ser. No. 955,502

Claims priority, application United Kingdom, Oct. 29, 1977, 45128/77

Int. Cl.[2] C04B *19/04*

U.S. Cl. 106—84 **10 Claims**

1. A foundry composition comprising a silica base, a silicate and propylene glycol monoacetate.

4,199,366

FIBER-REINFORCED CEMENT-LIKE MATERIAL

Peter Schaefer, Flims; Marcel Capaul; Wolfgang Griehl, both of Chur, and Peter Meier, Domat-Ems, all of Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Nov. 20, 1978, Ser. No. 962,734

Claims priority, application Switzerland, Nov. 21, 1977, 014172/77

Int. Cl.[2] C04B *31/34*

U.S. Cl. 106—90 **7 Claims**

1. A fiber-reinforced cement-like material comprising at least 2 volume % of fibers of polyvinyl alchol having an elongation at break of between about 4 and 8%, a modulus of more than 130 g/dtex, and a length of between about 3 mm and 12 mm.

4,199,367

ALLOY RAYON

Frederick R. Smith, Toms Brook, Va., assignor to Avtex Fibers Inc., Valley Forge, Pa.

Continuation-in-part of Ser. No. 629,952, Nov. 7, 1975, Pat. No. 4,136,697, and a continuation-in-part of Ser. No. 696,451, Jun. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 811,793, Jun. 30, 1977, Pat. No. 4,144,079. This application Apr. 22, 1977, Ser. No. 790,129

Int. Cl.[2] C08L *1/08*

U.S. Cl. 106—168 4 Claims

1. Alloy rayon staple fibers containing about 15 to 35% sodium carboxymethylcellulose b.o.c., at least about three fourths of the carboxyl groups of said sodium carboxymethylcellulose being in sodium salt form, said fibers having a denier of about 1½ to 6, said fibers carrying a lubricating finish in amount of less than 1% and said fibers having a fluid holding capacity of at least about 5.5 cc per gram as measured by the Syngyna test.

4,199,368

MEANS RENDERING DIFFICULT TO DISPERSE MATERIALS EASILY DISPERSIBLE

Emanuel J. McGinley, Morrisville, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 691,268, Jun. 1, 1976, abandoned. This application Jul. 7, 1978, Ser. No. 922,876

Int. Cl.[2] C08L *1/26*

U.S. Cl. 106—197 C 6 Claims

1. A method of preparing powders and granules capable of forming, in cold water with only mild agitation, a stabilized dispersion of a difficult to disperse organic material; said method comprising bringing together a difficult to disperse material and dry particles consisting essentially of beta-1,4 glucan having intimately associated therewith from about 1 to about 30 parts by weight of a water-soluble polymer, and mixing the difficult to disperse material and the dry particles in the absence of water for such time that the difficult to disperse material forms a substantially dry incomplete coating on said particles.

4,199,369

AQUEOUS FORTIFIED ROSIN DISPERSIONS

Richrd M. Hughes, Pennant Hills, and Heinz Warnecke, Epping, both of Australia, assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 740,583, Nov. 10, 1976, abandoned. This application Jun. 22, 1978, Ser. No. 918,011

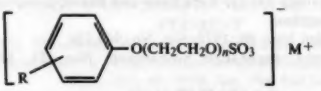
Claims priority, application Australia, Nov. 17, 1975, PC4005

Int. Cl.[2] C08L *93/04*

U.S. Cl. 106—238 41 Claims

1. In the inversion process of preparing paper size from fortified rosin wherein molten fortified rosin and water containing a dispersing agent are first mixed to provide a water-in-oil emulsion wherein the molten fortified resin is the continuous phase and the water is the disperse phase and the emulsion is subsequently inverted by the addition of water to provide an emulsion wherein the water is the continuous phase and the fortified rosin is the disperse phase, the improvement wherein there is employed as the dispersing agent one or more water-soluble compounds of the formulae

(I) and



$$[R'—O(CH_2CH_2O)_nSO_3]^- M^+ \quad \text{(II)}$$

wherein in formula (I), R is a normal or branched chain alkyl containing from 4 through 18 carbon atoms; wherein in formula (II) R' is a normal or branched chain alkyl or alkenyl or fused ring cycloalkyl containing from 10 through 20 carbon atoms; wherein in formulas (I) and (II), n is an integer such that of the molecular weight of each anion, from about 27% to about 75% thereof is attributable to the (CH_2CH_2O) group, and M^+ is a monovalent cation, other than hydrogen, that will allow substantial dissolution of said dispersing agent in water and will remain in solution during the preparation of the water-in-oil emulsion.

4,199,370

WEATHER RESISTANT TITANIUM DIOXIDE PIGMENT HAVING IMPROVED OPTICAL PROPERTIES AND PROCESS FOR MAKING SAME

John R. Brand, Palmerton, Pa., assignor to The New Jersey Zinc Company, Nashville, Tenn.

Continuation-in-part of Ser. No. 886,864, Mar. 15, 1978, abandoned. This application Mar. 26, 1979, Ser. No. 24,483

Int. Cl.[2] C09C *1/36*

U.S. Cl. 106—300 24 Claims

1. A substantially encapsulated weather-resistant pigment having improved optical properties consisting of pigmentary TiO_2 having an innermost coating of alumina in an amount between about 0.2% and 0.6% and outer coatings of amorphous, dense silica in an amount between about 1% and about 7%; voluminous silica in an amount between about 1% and about 8%; and precipitated alumina in an amount between about 2% and about 8%, the precentages of silica and alumina being calculated as SiO_2 and Al_2O_3 by weight based on the weight of the treated pigment.

4,199,371

PROCESS FOR CONTINUOUS ACID HYDROLYSIS AND SACCHARIFICATION

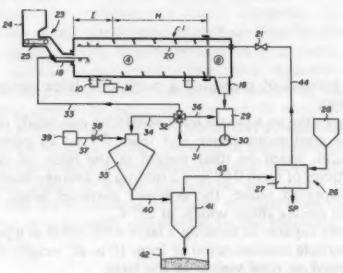
Alain Regnault, Ornex; Jean-Pierre Sachetto, St-Julien-en-Genevois; Herve Tournier, Valleiry, all of France; Thomas Hamm, Le Lignon, and Jean-Michel Armanet, Onex, both of Switzerland, assignors to Battelle Memorial Institute, Carouge-Geneva, Switzerland

Filed Mar. 31, 1978, Ser. No. 892,329

Claims priority, application Switzerland, Apr. 1, 1977, 4120/77

Int. Cl.[2] C13K *1/02*; B01F *1/00*; B01J *1/00*

U.S. Cl. 127—37 9 Claims



1. A process for continuously producing sugars by hydrolyzing lignocellulosic material with concentrated aqueous hydrochloric acid in a horizontal rotating tubular reactor which comprises the steps of:

(a) feeding concentrated aqueous hydrochloric acid to the reactor and forming a liquid bath in the bottom thereof,

(b) feeding lignocellulosic material to one end of the reactor,

(c) cyclically immersing said material in said acid bath while removing and draining a part of said material between consecutive immersions thereof by rotating the reactor,

(d) continuously and simultaneously with said immersing step conveying said material along the length of the reactor; and

(e) continuously discharging solid residue and liquid acid containing sugars by gravity from the opposite end of the reactor.

4,199,372

PROCESS FOR PREPARING MALTOSE-CONTAINING STARCH HYDROLYZATE AND CRYSTALLIZATION OF MALTOSE THEREFROM

Raoul G. P. Walon, Brussels, Belgium, assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Jan. 8, 1979, Ser. No. 1,661

Claims priority, application United Kingdom, Jan. 12, 1978, 129/78

Int. Cl.[2] C12P *19/20*

U.S. Cl. 127—40 6 Claims

1. A process for obtaining crystals of maltose of a size of at least 120 microns ×50 microns, comprising the following steps:

A. treating a starch hydrolyzate, having a maltose content of at least 75% and a viscosity of greater than 400 cps., with glucoamylase under hydrolyzing conditions to reduce the viscosity to below 400 cps., without substantially reducing the maltose content,

B. bringing the thus treated hydrolyzate to a state of supersaturation with respect to maltose by increasing the temperature and solids content, and inducing the start of crystallization in the super-saturated solution,

C. gradually lowering the temperature to permit crystallization to continue until at least 25% of the maltose has crystallised, and

D. recovering maltose crystals from the massecuite.

4,199,373

PROCESS FOR THE MANUFACTURE OF CRYSTALLINE FRUCTOSE

Basant K. Dwivedi, Randolph, and Subodh K. Raniwala, Hoboken, both of N.J., assignors to Chimicasa GmbH, Chur, Switzerland

Filed Apr. 13, 1979, Ser. No. 29,699

Int. Cl.[2] C13K *11/00, 1/00;* C13F *5/00*

U.S. Cl. 127—60 17 Claims

1. A process for the manufacture of an anhydrous, free-flowing, crystalline, fructose-containing material, which process comprises:

(a) providing an aqueous fructose-containing composition having a weight of from about 88% to 96% by weight of fructose or a mixture of fructose and glucose, and which solution is essentially free from discoloration;

(b) seeding said fructose-containing solution with from about 2% to 15%, based on the total weight of the solution, with seed crystals of the same general composition as the composition of the solution, and having a particles size of not greater than about 250 microns and at a temperature of from about 120° F. to 160° F.;

(c) permitting such seeded syrup solution to stand at about 50° F. to 90° F. and at a relative humidity below 70%, to provide for substantial crystallization of the fructose and/or glucose in the solution; and, thereafter,

(d) recovering the crystallized fructose from the crystallization solution and drying the fructose so recovered, to provide for a free-flowing, anhydrous, crystalline fructose or mixture of fructose and glucose.

4,199,374

PROCESS OF PREPARING CRYSTALLINE FRUCTOSE FROM HIGH FRUCTOSE CORN SYRUP

Basant K. Dwivedi, Randolph, and Subodh K. Raniwala, Hoboken, both of N.J., assignors to Chimicasa GmbH, Chur, Switzerland

Filed Dec. 22, 1978, Ser. No. 972,454

Int. Cl.[2] C13K *11/00*

U.S. Cl. 127—60 14 Claims

1. A process for preparing free-flowing fructose particles from a high-fructose syrup composition, which process comprises:

(a) providing a high fructose syrup composition having a fructose concentration of from about 50 to about 98% by weight;

(b) admixing the syrup composition with a foodacceptable, volatile alcohol to provide a homogeneous, clear, alcohol syrup solution with the ratio of the syrup composition to alcohol ranging from about 1-to-2 to 2-to-1 on a volume to weight basis, the moisture content of the syrup and the alcohol being such that Q is less than 0.25 in the equation:

$$Q = \frac{WsX_{M1} + WaX_{M2}}{Ws + WaX_{M2}}$$

wherein

(i) Ws is the weight of syrup;

(ii) Wa is the weight of alcohol;

(iii) X_{M1} and X_{M2} are the weight percent of moisture in syrup and alcohol;

(c) seeding the solution with fine saccharide particles and allowing the seeded solution to stand to provide crystallization of the fructose from the seeded solution; and

(d) recovering free-flowing fructose particles having a mesh size of less than about 400 mesh.

4,199,375

PROCESS FOR REMOVING DUST AND GREASE FROM PHONOGRAPH RECORDS

Maximilian E. Muller, Habelschwerdter Allee 13, 1000 Berlin 33, Fed. Rep. of Germany

Filed May 8, 1978, Ser. No. 903,907

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2722390

Int. Cl.[2] B08B *7/00*

U.S. Cl. 134—4 4 Claims

1. A process for removing dust and grease from the surface of a phonograph record by using a liquid composition capable of dissolving dust and grease and thereafter forming a film on the surface of said phonograph record, the steps of said process including:

(a) applying a liquid composition to the surface of a phonograph record,

said liquid composition including a solvent in an amount effective to dissolve grease and dust from the surface of said phonograph record,

said liquid composition including a polyvinyl alcohol in an amount effective to form a self supporting film on said surface of said phonograph record such that said dust and grease dissolved from said surface of said phonograph record is embedded within said self supporting film,

(b) waiting until said liquid composition forms said self supporting film on said surface of said phonograph record,

(c) applying an adhesive band over said self supporting film such that said adhesive band extends beyond the rim of said self supporting film,

(d) removing said adhesive band to remove said self supporting film from said surface of said phonograph record,

whereby said dust and grease is removed from said surface of said phonograph record without brushing.

4,199,376

LUMINESCENT SOLAR COLLECTOR

Richard C. Sill, Reno, Nev., assignor to Atlantic Richfield Company, Los Angeles, Calif.

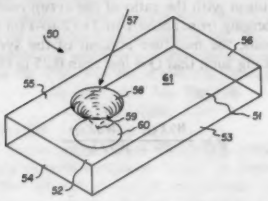
Filed Nov. 6, 1978, Ser. No. 958,226

Int. Cl.[2] H01L *31/04*

U.S. Cl. 136—89 FC 16 Claims

1. A luminescent solar collector comprising a luminescent sheet having first and second essentially parallel opposed large area surfaces separated by at least one thin edge face, said sheet being provided with at least one thin edge face, said sheet being provided with at least one cavity having an inwardly converging tapered annular side wall penetrating said first

surface and extending therefrom at least partially through such sheet toward said second surface, said side wall being contoured so that light energy incident thereon within said sheet is



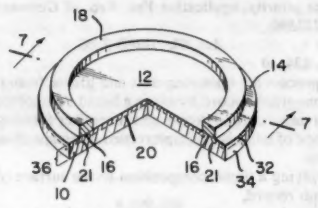
internally reflected toward said second surface, and a photovoltaic means supported in fixed relation adjacent the convergent end of each said cavity so as to receive said reflected energy.

4,199,377

SOLAR CELL

Rudolph E. Corwin, Seattle, and Dietrich E. Riemer, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 28, 1979, Ser. No. 16,245
Int. Cl.[2] H01L *31/06, 21/223, 21/76*
U.S. Cl. 136—89 SJ **14 Claims**



1. A method of manufacturing solar cells, comprising the steps of:

a. providing a wafer of semiconductor material with a peripheral unfinished edge and doped with an impurity of a first conductivity type;

b. depositing a dielectric material doped with an impurity of said first conductivity type on a major surface of said wafer;

c. forming an isolation member by removing an interior portion of said dielectric material so as to expose a portion of said major surface; and

d. forming an active region by diffusing an impurity opposite in polarity from said first conductivity type a predetermined distance beneath said exposed portion of said major surface so as to form a p-n junction which intersects said major surface beneath said isolation member such that said p-n junction is sealed beneath said isolation member without finishing said peripheral unfinished edge

9. A solar cell, comprising:

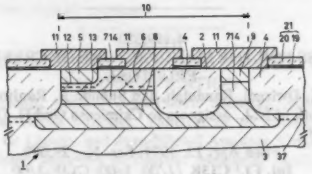
a wafer of semiconductor material with a peripheral unfinished edge and doped with an impurity of a first conductivity type; a major surface of said wafer having an outer region associated with said peripheral unfinished edge and an inner active region, both said regions being of a conductivity type opposite from said first conductivity type thereby forming p-n junctions within said wafer, and an intermediate lengthwise area of said wafer, closing upon itself and surrounding said active region, interadjacent said active region and said outer region; and an isolation member of dielectric material doped with an impurity of said first conductivity type, joined upon said major surface in an overlying relationship with said intermediate area, such that said active region is electrically isolated from said peripheral unfinished edge without finishing said peripheral unfinished edge.

4,199,378

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE MANUFACTURED WHILE USING SUCH A METHOD

Johannes A. A. van Gils, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 935,025
Claims priority, application Netherlands, Aug. 25, 1977, 7709363
Int. Cl.[2] H01L *21/225, 21/26, 27/04*
U.S. Cl. 148—1.5 **15 Claims**



1. A method of manufacturing a semiconductor device having a semiconductor body comprising a circuit element having at least three zones of alternating conductivity type situated on top of one other and a sunken oxide pattern at the upper surface of said semiconductor body which bounds a surface-adjoining region containing said zones of alternating conductivity type, including upper and lower zones of a first type conductivity and an intermediate zone of a second type conductivity opposite to that of the first, said intermediate zone forming p-n junctions with said upper and lower zones, which zones extend to said sunken oxide pattern, the method comprising the steps of:

providing the surface-adjoining region of a first type conductivity semiconductor material in said semiconductor body;

providing the sunken oxide pattern at the upper surface of said semiconductor body and surrounding said surface-adjoining region;

providing said intermediate zone of the second type conductivity in said surface-adjoining region in a first doping step;

masking the surface of said intermediate zone to form a window which, together with the sunken oxide pattern, defines a surface part of the intermediate zone which adjoins the sunken oxide pattern;

doping said intermediate zone at least through said window in a second doping step to increase the doping level of an upper portion of at least that part of the intermediate zone which adjoins the sunken oxide pattern;

providing said upper zone of the first type conductivity through said window, in said upper portion of the intermediate zone which adjoins the sunken oxide pattern and down to a depth of less than that of said upper portion; and

contacting said upper zone through said window.

4,199,379

METHOD FOR PRODUCING METAL PATTERNS ON SILICON WAFERS FOR THERMOMIGRATION

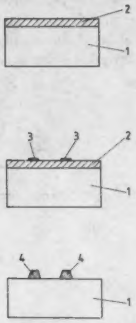
Tiberiu Mizrah, Baden, Switzerland, assignor to BBC Brown Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 15, 1978, Ser. No. 942,794

Claims priority, application Switzerland, Dec. 15, 1977, 15443/77

Int. Cl.[2] H01L *21/225*

U.S. Cl. 148—1.5 4 Claims



1. A method for producing an aluminum metal pattern on a surface of a silicon wafer for subsequent thermomigration of said aluminum pattern into said wafer, comprising:

applying to said surface of said silicon wafer an aluminum layer having a thickness in the range of from about 5 micrometers to about 100 micrometers;

applying to said aluminum layer a photoresist film covering said aluminum layer at those surface portions thereof where said aluminum metal pattern is to be produced;

etching away said aluminum layer in those surface portions thereof that are not covered by said photoresist film;

removing said photoresist film;

annealing said silicon wafer with said aluminum layer thereon in those surface portions thereof covered by said photoresist film during said etching, said annealing being effected below an eutectic point of a system consisting of said aluminum and said silicon for a period of about 30 minutes at a temperature in the range of from 560° to 570° C. in an inert gas atmosphere to form a sintered boundary layer between said silicon wafer and said aluminum metal pattern thereon.

4,199,380

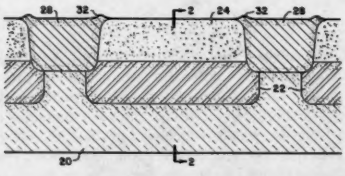
INTEGRATED CIRCUIT METHOD

Michael G. Farrell, Phoenix, and Sal T. Mastroianni, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1978, Ser. No. 960,143

Int. Cl.[2] H01L *21/26*

U.S. Cl. 148—1.5 11 Claims



1. A process for fabricating self-aligned, walled-emitter, oxide isolated integrated circuit devices on a silicon substrate which comprises: forming an oxidation resistant layer overlying a major surface of the silicon substrate; forming a pattern of apertures in said oxidation resistant layer; applying conductivity determining impurities of a first type through said pattern of apertures in said oxidation resistant layer to form a first region in a portion of said silicon substrate; oxidizing said silicon substrate exposed through said apertures in said oxidation resistant layer to form a localized oxide portion; forming a masking layer overlying said substrate and opening a second pattern of apertures therein, said second pattern of apertures together with said localized oxide portion defining regions on said major surface, said regions being in alignment with said first region; selectively applying conductivity determining impurities of said first type through a first group of said regions to form a second region; applying conductivity determining impurities of a second type opposite said first type through said first group of said regions to form a third region; and selectively applying conductivity determining impurities of said first type through a second group of said regions to form a fourth region.

4,199,381

PREPARATION OF METALS FOR COLD FORMING

Karl-Heinz Nuss, Neu-Isenburg; Klaus-Dieter Nittel; Han-Yong Oei, both of Frankfurt, and Gunter Siemund, Heusenstamm, all of Fed. Rep. of Germany, assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Aug. 14, 1978, Ser. No. 933,369

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736874

Int. Cl.[2] B21B *27/06;* B21C *9/00;* C23F *7/10*

U.S. Cl. 148—6.15 R 4 Claims

1. In a process for facilitating the cold-forming of metals by phosphatizing and subsequent treatment with an aqueous lubricant having an alkali-soap base, the improvement comprising employing a lubricant consisting essentially of between 10 and 100 g/l of alkali soap and between 0.1 and 10 g/l of a complex-former of at least one compound selected from the group consisting of EDTA; NTA; trans-1,2-diamino cyclohexane tetra-acetic acid; diethylene triamine penta-acetic acid; N-hydroxy ethylenediamine tri-acetic acid; N,N-di (β-hydroxyethyl) glycin; sodium glycoheptonate and the alkali metal or ammonium salts of any of the foregoing.

4,199,382

MAGNETIC MATERIAL

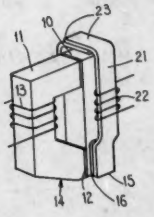
Peter C. Ridgway, Staines, and Derek F. Case, Sunbury on Thames, both of England, assignors to Data Recording Instrument Company Limited, Staines, England

Filed Jan. 16, 1978, Ser. No. 870,005

Claims priority, application United Kingdom, Jan. 20, 1977, 2200/77

Int. Cl.[2] H01F *1/04*

U.S. Cl. 148—120 3 Claims



1. A process for producing an element for use in a magnetic transducing head including the steps of selecting a sheet of magnetic material which has a low copper content and provides substantially the required magnetic properties; applying to at least part of one surface of the magnetic sheet an isolation layer of nickel which is substantially impervious to migration of copper at the annealing temperature of the magnetic sheet;

applying a copper layer over at least part of the nickel layer so that the copper layer is wholly isolated from the magnetic sheet by the nickel layer; cutting a piece from the sheet of material, the piece including a portion carrying a part of said nickel and copper layers, and bending the piece without substantially changing its cross-sectional area to form the desired element, the cutting and bending operations inducing mechanical stresses causing changes in the magnetic properties of the magnetic material; and thereafter heating the element to its annealing temperature to relieve said mechanical stresses and thereby to restore the magnetic properties.

4,199,383

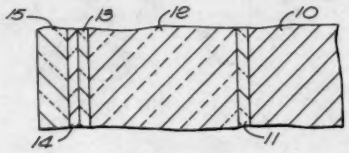
METHOD OF MAKING A PHOTOVOLTAIC CELL EMPLOYING A PBO-SNO HETEROJUNCTION

David B. Wittry, Pasadena, Calif., assignor to University of Southern California, Los Angeles, Calif.

Division of Ser. No. 792,171, Apr. 29, 1977, Pat. No. 4,099,199. This application Feb. 28, 1978, Ser. No. 881,936

Int. Cl.[2] H01L *27/14*

U.S. Cl. 148—174 **16 Claims**



1. In a method of making a photovoltaic cell, the steps comprising:

providing a substrate of electrically conductive material;

forming on said substrate a first region of photoconductive material selected from SnO and $Pb_{1-x}Sn_xO$, having a first conductivity type;

forming a second region, of intrinsic photoconductive $Pb_{1-x}Sn_xO$, on said first region; and

forming a third region, of photoconductive material selected from PbO and $Pb_{1-x}Sn_xO$ having a conductivity type opposite said first conductivity type, on said second region;

wherein x is progressively smaller from said first region to said third region from a value of less than 1 to a value of greater than 0.

4,199,384

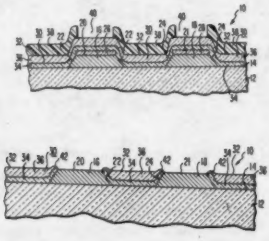
METHOD OF MAKING A PLANAR SEMICONDUCTOR ON INSULATING SUBSTRATE DEVICE UTILIZING THE DEPOSITION OF A DUAL DIELECTRIC LAYER BETWEEN DEVICE ISLANDS

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,579

Int. Cl.[2] H01L *21/205, 21/84, 29/04*

U.S. Cl. 148—174 **4 Claims**



1. A method of making a planar silicon-on-insulating-substrate device of the type having a plurality of silicon islands spaced apart on a plane surface of an insulating substrate, said islands having a predetermined thickness, and having coplanar surfaces parallel to the surface of the substrate and side surfaces at an angle to the substrate, said method comprising the steps of

depositing on the surface of the substrate in the spaces between the islands a layer of a semi-insulating material having a thickness less than the thickness of the islands, and

depositing on the layer of semi-insulating material a layer of insulating material having a thickness substantially equal to the balance of the thickness of said islands so as to form a surface substantially coplanar with the coplanar surfaces of said islands.

4,199,385

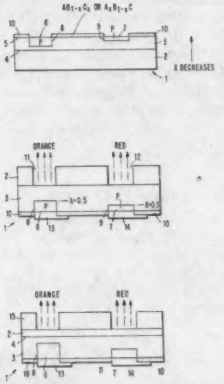
METHOD OF MAKING AN OPTICALLY ISOLATED MONOLITHIC LIGHT EMITTING DIODE ARRAY UTILIZING EPITAXIAL DEPOSITION OF GRADED LAYERS AND SELECTIVE DIFFUSION

Roland Y. Hung, and Kwang K. Shih, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 835,098, Sep. 21, 1977. This application Mar. 5, 1979, Ser. No. 17,643

Int. Cl.[2] H01L *21/76, 33/00, 21/20*

U.S. Cl. 148—175 **4 Claims**



1. The process of forming an integrated light emitting diode array comprising in combination the steps of; providing a substrate of optically isolating semiconductor material; growing an epitaxial region of a compound semiconductor material selected from the group consisting of $AB_{1-x}C_x$ and $AxB_{1-x}C$, said material having a vertical variation in the x value of the concentration of ingredients and decreasing in the direction of the surface of said region; forming a plurality of p-n junctions to selected depths in said epitaxial region.

removing portions of said substrate in registration with said p-n junctions; and

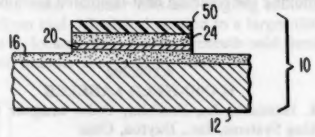
providing electrical contact across each said p-n junction.

4,199,386

METHOD OF DIFFUSING ALUMINUM INTO MONOCRYSTALLINE SILICON

Wojciech Rosnowski, Summit, N.J., and John M. S. Neilson, Mountaintop, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1978, Ser. No. 964,386
Int. Cl.[2] H01L 21/225
U.S. Cl. 148—188 11 Claims



1. A method of diffusing aluminum into monocrystalline silicon comprising the steps of:

first forming a polycrystalline silicon underlayer on a first surface of a body comprising said monocrystalline silicon;

second forming a layer of aluminum metal on said first surface of said body while said monocrystalline silicon is at a temperature which is less than about 250° C.;

third forming a silicon overlayer on said aluminum layer at a temperature which is less than about 250° C.; and

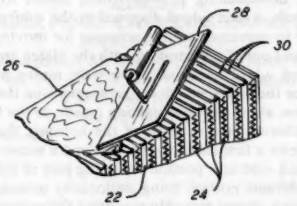
raising the temperature of said body to between 900° C. and 1300° C. to cause the aluminum to diffuse into the monocrystalline silicon.

4,199,387

AIR FILTER FABRICATION METHOD

Stephen M. Hladik, Liverpool, N.Y., assignor to Cambridge Filter Corporation, Syracuse, N.Y.

Filed Dec. 2, 1977, Ser. No. 856,673
Int. Cl.[2] B31F 1/00; B01D 25/02
U.S. Cl. 156—160 5 Claims



1. A method of fabricating a high-efficiency air filter unit suitable for high temperature applications comprising:

(a) forming a filter core by folding a continuous sheet of filter media at evenly spaced intervals in accordian fashion, thereby providing a plurality of side-by-side pleats;

(b) covering each of the two sides of said filter core formed by zig-zag edges of said media with a layer of ceramic adhesive in the form of a spreadable slurry mix which later hardens to form a ceramic cement layer;

(c) wrapping said filter core on four sides including the two-slurry-covered sides with a compressible blanket of fibrous ceramic material while said slurry is in a wet and flowable condition; and

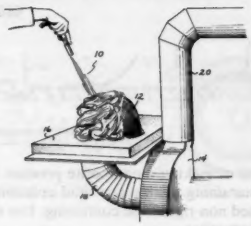
(d) mounting said core and blanket within a rigid, four-sided, boxlike support frame of such dimensions relative to said core and blanket that the latter is compressed between said frame and core to a fraction of its uncompressed thickness.

4,199,388

METHOD FOR MAKING A MULTI-PLY CONTINUOUS FILAMENT BALLISTIC HELMET

Henry J. Tracy, Newburyport; David E. Holt, Winchester, and Janet E. Tracy, Newburyport, all of Mass., assignors to Geonautics, Inc., Newburyport, Mass.

Filed May 15, 1978, Ser. No. 909,648
Int. Cl.[2] B29D 3/02, 9/00
U.S. Cl. 156—166 20 Claims



1. A method for making a ballistic helmet, comprising the steps of:

(1) forming plural nestable, helmet-shaped, resin containing preforms, each being made by depositing at least one continuous filament bundle on a helmet-shaped form, coating the continuous filament material with a solvent solution of curable resin and removing the solvent from said solution;

(2) only partially curing the resin;

(3) then arranging the preforms in nesting relation in a mold to form a stack of partially cured preforms; and,

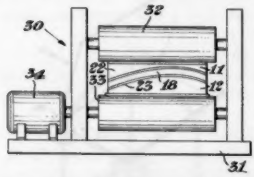
(4) applying heat and pressure to bond said stack of partially cured preforms together by further curing the partially cured resin in the preforms, thereby molding said stack of partially cured preforms into a laminated helmet.

4,199,389

METHOD OF MAKING CURVED LAMINATED PANELS

Albert J. Palfey, Midland, and William P. Hovey, Mt. Pleasant, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 26, 1976, Ser. No. 690,229
Int. Cl.[2] B32B 31/20
U.S. Cl. 156—196 4 Claims



1. In a method for the preparation of a foam core sandwich panel having a curved portion therein, the steps of the method comprising disposing between a pair of matched dies a core of foam synthetic resinous material having first and second major faces, a first skin or facing sheet adjacent the first major face of the core, a second facing sheet adjacent the second major face of the core, first and second pressure sensitive adhesive layers disposed adjacent the first and second major surfaces of the core, respectively, pressing the core, facing sheets and adhesive layers between matched dies to cause the foam facing sheets and adhesive layers to conform to the matched dies and adhere together to form a curved laminated foam core sandwich panel, the improvement which comprises applying pressure to the matched dies core facing sheets and adhesive by

means of passing the matched dies between opposed pressure rolls.

4,199,390

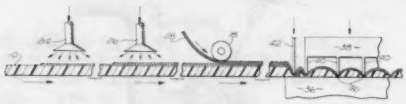
EMBOSSING AND LAMINATING PROCESS

Stephen L. Pollard, 405 Holly Ave., Monrovia, Calif. 91016

Continuation of Ser. No. 444,723, Feb. 22, 1974, abandoned. This application Sep. 19, 1975, Ser. No. 615,125

Int. Cl.[2] C09J *5/04*

U.S. Cl. 156—209 **8 Claims**



1. A method of making a composite product having a preformed, self-sustaining pliable non-void containing skin sheet and a preformed non-rigid void containing, low density plastic layer which comprises:

(1) establishing a layer of said low density plastic,

(2) spraying on at least one side of liquid sprayable curative to yield a wetted surface on said low density plastic,

(3) next spraying on said wet surface of the low density plastic a liquid sprayable polymer to wet the surface of the low density plastic with said polymer, said polymer being one which together with said curative is reactive at elevated temperature to form a tenacious, essentially nonporous adhesive which bonds to both said sheet and said layer,

(4) next contacting said skin sheet with said wetted surface of said low density plastic layer, and

(5) curing said polymer at elevated temperature whereby said skin sheet is adhered to said layer.

4,199,391

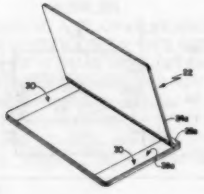
METHOD OF USING A LAMINATING CARRIER

Paul A. Andrews, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 471,570, May 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 295,202, Oct. 5, 1972, abandoned. This application Aug. 23, 1978, Ser. No. 936,125

Int. Cl.[2] C09J *5/00;* **B30B** *15/34*

U.S. Cl. 156—324.4 **8 Claims**



1. A process comprising the steps of inserting a laminar assembly, prior to application of heat thereto, between the front and back members of a carrier, said laminar assembly comprising an information-bearing card interposed between a transparent sheet as a front member and a plastomeric sheet as a back member and a heat activatable adhesive system which comprises at least one layer of a heat activatable adhesive integrated with at least one of said front and back members, said carrier having lengthwise and widthwise dimensions exceeding those of said assembly and comprising front and back members coupled along one edge thereof, a first edge located near or at said coupled edge against which a side of said laminar assembly can be butted, an elevation positioned on at least one of said members parallel to said first edge, said elevation providing a second edge positioned apart from said first edge so that the side of said laminar assembly parallel to the side thereof butted against said first edge can be butted against said second edge so that the laminar assembly can be closely accommodated between said first and second edges, said second edge having a minimum thickness no less than that required to retain any of said adhesive system from being extruded between that side of said front and back members butted against said second edge; applying sufficient heat and pressure to said carrier and assembly to effect heat lamination of said assembly; and removing the resulting heat-laminated assembly from said carrier.

4,199,392

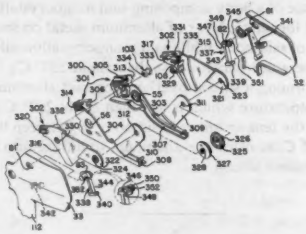
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Feb. 8, 1978, Ser. No. 876,291

Int. Cl.[2] B41K *1/00*

U.S. Cl. 156—384 **27 Claims**



1. Hand-held apparatus for printing and applying labels, the apparatus being adapted to carry a label roll having pressure sensitive labels releasably adhered to a web of supporting material, the apparatus comprising: a frame including a housing having an opening, the housing providing interior space, the housing having a handle, a manually operable actuator disposed at the handle, a subframe disposed in the space, a platen and a cooperable print head mounted on the subframe, means for delaminating printed labels, means for applying printed labels, a feed wheel disposed in the subframe, means responsive to movement of the actuator for moving the print head into and out of cooperation with the platen and for moving the feed wheel to advance the web, means providing a pathway for the web through the subframe from the label roll, to the platen, about the delaminating means, to the feed wheel and from there to the exterior of the housing, the subframe having at least a first subframe portion and a second subframe portion, each subframe portion including part of the pathway, the first subframe portion being stationarily mounted relative to the housing, means movably mounting the second subframe portion relative to the first subframe portion, the second subframe portion being movable into the housing opening to expose a part of the pathway and at least part of the feed wheel.

4,199,393

APPARATUS FOR FORMING THE BEAD AND SIDEWALL PORTIONS OF A PNEUMATIC TIRE AND APPARATUS AND METHOD OF MAKING THE SAME

Robert L. Brown, Akron; Kenneth W. Dunaway, Massillon, and Virgil E. Henley, Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Sep. 6, 1978, Ser. No. 939,946

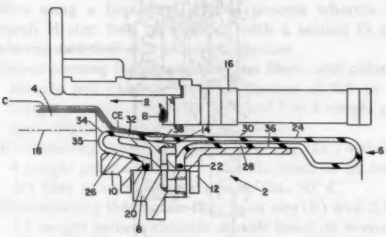
Int. Cl.[2] B29H *17/12*

U.S. Cl. 156—401 **5 Claims**

1. A tire building apparatus having a building drum and an inflatable, cord reinforced, elastomeric, toroid shaped bladder disposed at an axial end of said building drum, said bladder being designed for turning up and wrapping the plies of a tire

carcass around a bead ring positioned adjacent said axial end of said building drum and including an outer bladder fold having a substantially cylindrical portion that is of a diameter less then the diameter of said building drum when said bladder is completely deflated, said bladder also including an inner bladder fold disposed radially inwardly from said outer bladder fold, wherein the improvement comprises:

(a) said outer bladder fold having a conical portion axially adjacent said building drum, said conical portion having a smaller diameter and merging with said cylindrical portion of the outer bladder fold and angling radially outwardly from said cylindrical portion to a larger diameter end that is located immediately beneath said bead ring when said bladder is completely deflated;



(b) a portion of said inner bladder fold merging in a molded crease with the larger diameter end of said conical portion of said bladder fold; and

(c) a control ring insert positioned within said bladder and between said inner and outer bladder folds, said control ring insert positioned axially outwardly of said molded crease, said control ring insert positioned to engage said inner bladder fold at a location adjacent said molded crease after the initial inflation of said bladder and restrain the said inner bladder fold and connected outer bladder fold from moving axially away from said bead ring when said bladder is further inflated.

4,199,394

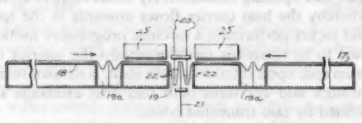
RIBBED FIBER PANEL AND MEANS AND METHOD OF MANUFACTURE

James D. Thompson, P.O. Box 684, Sturges, Mich. 49091

Division of Ser. No. 866,839, Jan. 4, 1978. This application Aug. 3, 1978, Ser. No. 930,666

Int. Cl.[2] B31F *1/34*

U.S. Cl. 156—461 **4 Claims**



1. Means for forming a ribbed panel, characterized by:

a. a table for supporting longitudinally movable flexible sheet of fibrous material impregnated with a bonding plastic in a plastic state;

b. means forming a set of rib receiving slots extending longitudinally of the table;

c. means for forcing parallel portions of the sheet material in succession into the slots to form pairs of longitudinally extending rib forming laminations in the material, joined by webs of the material;

d. means for restraining the laminations in their formed condition;

e. means for pressing the laminations together for bonding engagement to form the ribs;

f. and means for causing the plastic to stiffen the ribs and connecting webs of the material.

4,199,395

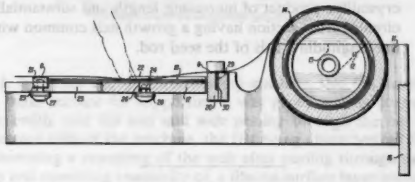
DEVICE FOR APPLYING SHEET MATERIAL, SUCH AS LABELS AND THE LIKE, TO A BACKING SURFACE BY MEANS OF TRANSPARENT ADHESIVE TAPE

Luigi A. Brolo, Via Litta Modignani 8, Milan, Italy

Filed May 30, 1978, Ser. No. 911,036

Int. Cl.[2] B65C *9/12, 11/00*

U.S. Cl. 156—510 **3 Claims**



1. A device for uniting sheet material, such as labels and the like, and transparent adhesive tape so that the united sheet material and tape can be applied to a surface, in combination comprising a box-like body or element, having provided therein a first seat or housing for a roll of transparent adhesive tape, a second seat or housing for a pile of labels and between said two seats or housings a device for cutting said tape in transverse direction, wherein said cutting device comprises a blade secured to a handle, said blade and handle being partially guided to slide within a groove in said box-like body or element to cut said tape when transversely moved across said tape from a rest position, and return spring means coupled to said handle and blade for returning said handle and blade along said groove to said rest position.

4,199,396

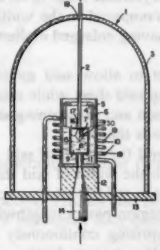
METHOD FOR PRODUCING SINGLE CRYSTAL GADOLINIUM GALLIUM GARNET

Charles D. Brandle, Jr., and John B. Hassell, Jr., both of San Diego, Calif., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 699,460, Jun. 24, 1976, abandoned. This application Apr. 26, 1978, Ser. No. 900,268

Int. Cl.[2] B01J *17/18*; C01F *17/00*

U.S. Cl. 156—617 SP **6 Claims**



1. Method for producing a virtually perfect unicrystalline gadolinium gallium garnet boule having a diameter of about 2.2 to 3.2 inches which comprises:

(i) forming a melt by heating a mixture of Gd_2O_3 and Ga_2O_3 in molar ratio of 3:5 initially containing less than about 10 ppm in the aggregate of calcium, magnesium and stron-

tium, and adding a predetermined amount of at least one metal ion selected from the group consisting of calcium, magnesium and strontium to provide from about 15 to 100 ppm in the aggregate of selected metal ion in the melt, the melt being at a temperature in the range of 1700° to 1800° C.

(ii) inserting a seed rod of unicrystalline gadolinium gallium garnet into the melt,

(iii) maintaining an atmosphere over the melt which is substantially chemically inert to the melt, and

(iv) withdrawing the seed rod from the melt such that gadolinium gallium garnet material is solidified and crystallized on the seed rod to form a virtually perfect massive unicrystalline product of increasing length and substantially circular cross-section having a growth axis common with the longitudinal axis of the seed rod.

4,199,397

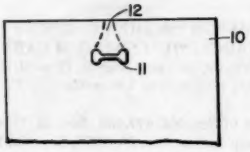
SPONTANEOUS GROWTH OF LARGE CRYSTAL SEMICONDUCTOR MATERIAL BY CONTROLLED MELT PERTURBATION

Richard W. Gurtler, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 656,768, Feb. 9, 1976, abandoned. This application Aug. 11, 1977, Ser. No. 823,564

Int. Cl.[2] B01J *17/12*

U.S. Cl. 156—620 **3 Claims**



1. In a continuous process for converting a polycrystalline semiconductor sheet to a macrocrystalline sheet which comprises the steps of:

heating said polycrystalline sheet to form a molten region of small width as compared to the width of said sheet, said molten region having enlarged molten regions at each end thereof;

moving said sheet to allow said molten region to travel lengthwise along said sheet while extending the width of said molten region and maintaining said enlarged molten regions at the ends thereof;

continuing to extend the width of said molten region until coextensive with the width of said sheet; and

allowing said sheet to solidify into macrocrystalline material as said molten region passes lengthwise along it, the improvement comprising continuously creating additional small width molten regions having enlarged molten regions at each end thereof, said additional regions created centrally of the previously extended molten region as the edges of the previous enlarged molten regions extend to the sides of said sheet, and extending said additional molten regions laterally outwardly along said traveling molten region to the sides of said sheet.

4,199,398

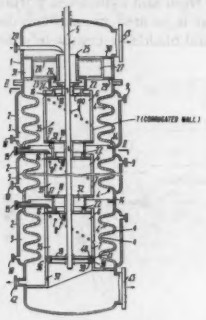
ROTARY FILM APPARATUS

Ivan F. Evkin, Bulvar Matrosa Zheleznyaka, 9a, kv. 76; Viktor M. Olevsky, Leningradsky prospekt, 75a, kv. 91; Vitaly R. Ruchinsky, prospekt Mira, 202, kv. 21; Valentin A. Tatyanchikov, Universitetsky Prospekt, 4, kv. 296, and Jury N. Nikolaev, proezd Dezhneva, 18, kv. 47, all of Moscow, all of U.S.S.R.

Filed Jan. 27, 1978, Ser. No. 873,432

Int. Cl.[2] B01D *1/22*

U.S. Cl. 159—6 R **3 Claims**



1. A rotary film heat exchange apparatus comprising:

a rotatably mounted substantially vertically extending shaft;

at least one hollow drum coaxially fixed to and rotatable with said shaft, said hollow drum being defined by a substantially cylindrical corrugated wall having fluid discharge apertures formed therein;

a hollow vertically extending body coaxially surrounding said shaft and associated hollow drum, said hollow body having a heat exchange surface defined by a plurality of coaxially aligned vertically adjacent truncated ones, each of said truncated cones having opposed first reduced diameter and second enlarged diameter base regions, alternate pairs of said truncated cones being conjugated at respective first and second base regions;

a jacket surrounding said hollow body and defining therewith a space in which a heat carrier is adapted to circulate along a path; and horizontal rings circumferentially enveloping said body in the area of conjugation of said second enlarged base regions of the cones, said rings having openings in each of them, and along the path of movement of the heat carrier a vertical partition is mounted in front of each said opening consecutively offset relative to another whereby the heat carrier flows upwards in the space of said jacket performing a circular progressive motion and fluid to be treated is introduced into the interior of said drum and, upon rotation of said shaft, is thrown therefrom through said apertures onto said heat exchange surface defined by said truncated cones.

4,199,399

METHOD FOR PREPARING BAGASSE DISSOLVING PULPS AND PRODUCING RAYON HAVING A DEGREE OF POLYMERIZATION OF AT LEAST 800 THEREFROM

Eduardo J. Villavicencio, San Angel, Mexico, assignor to Process Evaluation & Development Corp., Dallas, Tex.

Continuation-in-part of Ser. No. 678,297, Apr. 19, 1976, abandoned. This application Oct. 25, 1978, Ser. No. 954,668

Int. Cl.[2] D01C *1/00*

U.S. Cl. 162—85 **7 Claims**

1. A method for preparing a bagasse dissolving pulp suitable for producing a rayon having a degree of polymerization of at least 800 comprising:

(a) prehydrolyzing said bagasse fiber with water at autoge-

nous pressure and at a temperature of about 100° C. to 220° C. for about 5 to 90 minutes, the water to bagasse fiber being 1:1 to 15:1;

(b) digesting the prehydrolyzed bagasse fiber and leaching the silica content therefrom with an alkaline liquor containing about 4 to 10 weight percent sodium hydroxide and about 10 to 18 weight percent sodium sulfite based on oven-dry bagasse fiber, the ratio by weight of sodium hydroxide to sodium sulfite being about 1:1 to 1:3 the pH of the prehydrolyzed bagasse fiber-alkaline liquor mixture being 10.5 to 11.5 and maintaining the pH of the digestion mixture within said pH range throughout at least the first half of the digestion time;

(c) bleaching the digested bagasse fibers substantially free of silica using a four-step DcEDH process wherein the fourth H step may be replaced with a second D step wherein said four-step process comprises:

(Dc)-contacting the digested bagasse fibers with chlorine dioxide and chlorine at concentration of 0.5 to 1.5 weight percent chlorine dioxide and 2 to 4 weight percent chlorine based on oven-dry fiber;

(E)-contacting the bagasse fibers from step (Dc) with 2 to 4 weight percent sodium hydroxide based on an oven-dry fiber at a temperature greater than 50° C.

(D)-contacting the bagasse fiber from step (E) with 0.5 to 1.5 weight percent chloride dioxide based on oven-dry fiber at a temperature greater than 50° C.;

(H)-contacting the bagasse fiber from step (D) with sodium hypochlorite having 0.5 to 1.0 weight percent available Cl_2 based on oven-dry fiber; and

(d) recovering a bagasse dissolving pulp.

4,199,400

MIGRATION-RESISTANT BINDER COMPOSITIONS FOR BONDING NONWOVEN FIBERS; ALSO METHODS AND ARTICLES

Ronald D. Bakule, Jenkintown; R. A. Gill, Abington, and Lawrence K. Wempe, Lansdale, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 686,980, May 17, 1976, Pat. No. 4,119,600. This application Jun. 13, 1977, Ser. No. 806,047

Int. Cl.² D04H *1/64;* D21F *11/00;* D21H *5/12, 5/14*

U.S. Cl. 162—146 **30 Claims**

1. A mixture adapted to form a bonded composite comprising nonwoven fibers having evenly distributed therewith a migration resistant binder composition comprising:

(A) an anionically stabilized polymer latex;

(B) a water-soluble polymer of 20% to 100% by weight of mer units containing an amine group and having a viscosity average molecular weight between 5,000 and 300,000;

(C) a volatile base; and

(D) 0 to 80% of pigment based on the total polymer weight of (A) and (B);

the latex polymer and the water-soluble polymer each being a polymer of at least one α-β ethylenically unsaturated monomer.

23. A nonwoven composite formed from the composition of claim **1**.

27. A process for making a nonwoven composite which comprises associating, within a web or mat, fibers selected from the group consisting of cellulosic fibers, polyamide fibers, glass fibers, vinyl resin fibers and polyester fibers and bringing into contact with the fibers the binder of claim **1** and drying the binder.

4,199,401

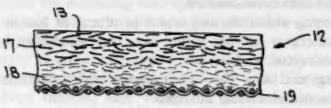
FELT FOR PAPERMAKING MACHINE

Thomas J. Liu, Chapin, S.C., and Cyrille M. Cottigny, deceased, late of Clinton, S.C. (by Gisele B. Cottigny, executrix), assignors to Asten Group, Inc., Devon, Pa.

Filed Mar. 1, 1979, Ser. No. 16,504

Int. Cl.² B32B *5/12*

U.S. Cl. 162—358 **1 Claim**



1. A felt for use in a papermaking machine, said felt having an outer surface for supporting a wet paper web in contact therewith, said felt and said web passing through the nip of pressure rolls of the machine, the felt being characterized for minimizing a rewetting of the web after passing through said nip and consisting essentially of, a fibrous surface layer including said outer surface, and a fibrous underlayer secured to said surface layer, said underlayer including a reinforcing base fabric, said surface layer comprising a batt of fibers having a predetermined denier measurement, said underlayer comprising a batt of fibers having a predetermined denier measurement less than the denier measurement of said surface layer fibers, the difference between the denier measurement of said surface layer fibers and the denier measurement of said underlayer fibers being at least 5.00 denier, whereby water within said felt after passing through said nip migrates away from said outer surface to said fibrous underlayer as caused by capillary action as pressure on said felt and said web is released.

4,199,402

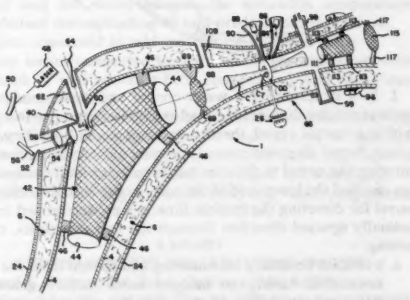
PLASMA ENERGY PRODUCTION

Abul A. M. Ahmed, 1111 Army-Navy Dr., RiverHouse No. 1 Apt. B 306, Arlington, Va. 22202

Filed Feb. 23, 1976, Ser. No. 659,681

Int. Cl.² G21B *1/00*

U.S. Cl. 176—3 **2 Claims**



1. A process for generating nuclear fusion, comprising the steps of:

creating non-neutralized Tritium and Duterium ions within an accelerator by impinging laser energy on a Duterium-Tritium pellet,

propelling said ions within the accelerator from first positions to each relative minimum cross-section positions of the accelerator,

injecting electrons at each relative minimum cross-section of the accelerator to neutralize the space charge of said ions and to create a plasma,

compressing and confining said plasma at a maximum density by electromagnetic fields,

creating an electron cloud at each relative minimum cross-section encircling said plasma, whereby said ions of said plasma oscillate toward and away from electrons in said electron cloud and whereby the confinement time and density of ions at each relative minimum cross-section is sufficient to generate nuclear fusion,

extracting the heat of fusion as useful energy,

releasing the magnetic fields subsequent to fusion and allowing the escape of the products of fusion from each relative minimum cross-section,

extracting electrons and waste products of fusion from the accelerator leaving solely ions for circulation within the accelerator, and

passing said ions through magnetohydrodynamic coils to generate electrical current.

4,199,403

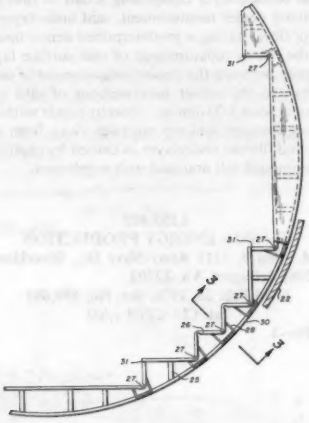
SEISMIC CORE SHROUD

Arun Puri, Simsbury, and John F. Mullooly, East Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 21, 1977, Ser. No. 853,714

Int. Cl.[2] G21C *15/00*

U.S. Cl. 176—61 **4 Claims**



1. In a structure for a water-cooled and water-moderated nuclear reactor that includes fuel assemblies arranged in a core within a reactor vessel, thereby defining a core boundary, and a core barrel disposed around the core for confining coolant entering the vessel to the core barrel exterior until the coolant has reached the lower end of the core, a core shroud within the barrel for directing the coolant flow in a predetermined longitudinally upward direction through the fuel assemblies, comprising:

a. a coolant boundary surrounding and spaced from the fuel assemblies, having an integral inner surface generally following the shape and extending the entire longitudinal length of the core boundary, for channeling the coolant through the fuel assemblies;

b. a plurality of longitudinally spaced, substantially cylindrical bands positioned inside the core barrel and surrounding the coolant boundary; and

c. a plurality of discrete support members for transferring loads from the coolant boundary to bands, including strut means extending between the coolant boundary and each band, the thicknesses of the strut means in the circumferential direction being smaller than the distance between proximate struts, whereby uninterrupted longitudinal flow between the coolant boundary and the core barrel may be maintained for cooling the coolant boundary.

4,199,404

HIGH PERFORMANCE NUCLEAR FUEL ELEMENT

Walter J. Mordarski, Wallingford, and Sylvester T. Zegler, West Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 5, 1977, Ser. No. 822,115

Int. Cl.[2] G21C *3/02*

U.S. Cl. 176—66 **6 Claims**

1. In a breeder-reactor fuel pellet of the type formed by compressing and sintering a blend of fissile and fertile components and loaded into fuel rods of a thin metal cladding, the improvement wherein:

a. at least 90 percent of the fissile component content of the fuel pellet is contained in a powder consisting essentially of a blend of fissile and fertile components having a fissile-component percentage between 20 and 40 percent, the powder having a stable microstructure and a density less. than about 85 percent of theoretical; and

b. at least half of the fertile component content of the fuel pellet is contained in particles greater than about 50 microns in diameter, the average of the individual densities of the particles being greater than about 95 percent of theoretical.

4,199,405

SIDE REFLECTOR FOR A HIGH-TEMPERATURE NUCLEAR REACTOR

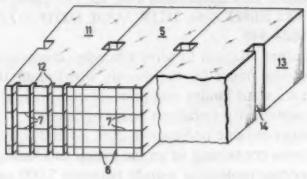
Fritz Schweiger, Hagen, Fed. Rep. of Germany, assignor to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europäisches Unternehmen, Hamm-Uentrop, Fed. Rep. of Germany

Filed Jul. 21, 1977, Ser. No. 817,741

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1976, 2643275

Int. Cl.[2] G21C *5/08*

U.S. Cl. 176—84 **9 Claims**



1. In a gas-cooled high temperature nuclear reactor having an axially elongated core with the axis of the core extending vertically and with the core having a lower region and an upper region, a graphite side reflector for said core extending in the axial direction thereof, said side reflector comprising an annular wall laterally adjacent to and laterally enclosing the outer surface of said core and having a radially inner surface and a radially outer surface relative to the axis of the core, said wall comprising a plurality of superosed annular layers, each said layer comprising a plurality of blocks with each said block extending continuously in a radial direction of the core from the inner surface to the outer surface of said reflector with each said block having a radially inner face forming a portion of the

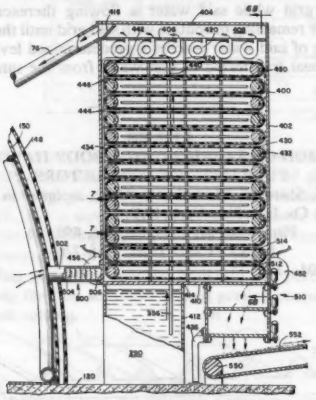
radially inner surface of said reflector, at least said blocks in said wall enclosing the upper region of said core having recesses extending into the inner face of said block with said recesses extending generally in the direction from the radially inner surface toward the radially outer surfaces of said side reflector, said recess arranged in two sets with the recesses of one set extending transversely across the recesses in the other set.

4,199,406

APPARATUS FOR DESALINATING WATER

Richard E. Diggs, 12A Rd., Carthage, Mo. 64836

Division of Ser. No. 625,850, Oct. 28, 1975, Pat. No. 4,118,283.
This application Jan. 12, 1978, Ser. No. 868,998
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.[2] C02B *1/04;* B01D *3/10;* F24J *3/02*
U.S. Cl. 202—176 **14 Claims**



1. A distillation device comprising:
a first water transfer means for withdrawing contaminated water from a body of water having solid contaminants dissolved therein;
a grid connected to said first water transfer means so that contaminated water received from said body of water flows across said grid, said grid having an outer peripheral edge and an inner peripheral edge and comprising a header located on said grid outer peripheral edge and fluidly connected to said first water transfer means so that contaminated water flows into said header from the body of water, said header being fluidly attached to said grid so that contaminated water flows from said header onto said grid whereby contaminated water flows from the body of water to said grid via said header, and a trough located on said grid inner peripheral edge and fluidly attached to said grid so that contaminated water flows into said trough from said grid, and means for transferring solar energy to said water flowing across said grid;
a water storage means having a side wall attached to said grid trough so that contaminated water flowing on said grid flows into said water storage means via said trough;
second water transfer means connected with said water storage means for removing contaminated water from said storage means;
a third water transfer means located in said trough and connected to said water storage means for transferring water from said trough to said water storage means and temperature control means connected to said third water transfer means for actuating said third water transfer means when the temperature of said water in said trough reaches or exceeds said predetermined temperature so that only water having a temperature which equals or exceeds said predetermined temperature is transferred to said water storage means;
a heat exchange structure connected to said water storage means;
a recirculation apparatus mounted in said trough and connected to said header for recirculating said water from said trough back to said header prior to transferring water from said trough into said water storage means and temperature control means connected to said recirculation apparatus for actuating said apparatus when the temperature of said water in said trough falls below a predetermined temperature;
a vaporizer means connected to said heat exchange structure for separating said water from said solid contaminants dissolved therein, said vaporizer means having a solar concentrator means for transferring solar energy to said contaminated water flowing from said heat exchange structure into said vaporizer means;
vacuum producing means for producing a vacuum in said vaporizer means so that said contaminated water is vaporized under vacuum conditions to form water vapor and thereby separate said water from said solid contaminants, and solid removing means connected to said vaporizer means for removing said solid contaminants from said vaporizer means;
water vapor transfer means connected to said vaporizer means for removing said water vapor from said vaporizer means;
condenser means connected to said water vapor transfer means for condensing said water vapor to form distilled water which is free of solid contaminants; and
distillate transfer means connected to said condenser means for withdrawing condensed water from said condenser means;
wherein said vaporizing means includes:
a casing having a top and a bottom;
inlet means connected to said casing through which hot water flows into the vaporizing means during an evaporation step of the distillation process;
a plurality of belts movably attached to said casing on the inside thereof;
vacuum producing means connected to said casing for producing a vacuum inside said casing to maintain a predetermined pressure inside said casing so that the temperature of said hot water exceeds the saturation temperature thereof corresponding to said predetermined pressure;
means connected to said case for moving said belts;
spray means connected to said inlet means associated with each of said movable belts for spraying said hot water onto said belts;
vapor removal means connected to said casing for removing water vapor produced by the vaporization of said hot water in said vaporizing means so that said water vapor is separated from solids dissolved in said hot water; and
means for removing said solids from said vaporizing means.

4,199,407

APPARATUS FOR DESALINATING WATER

Richard E. Diggs, 12 A Road, Carthage, Mo. 64836

Division of Ser. No. 625,850, Oct. 28, 1975, Pat. No. 4,118,283.
This application Jan. 12, 1978, Ser. No. 868,974
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.[2] C02B *1/04;* B01D *3/10;* F24J *3/02*
U.S. Cl. 202—176 **3 Claims**

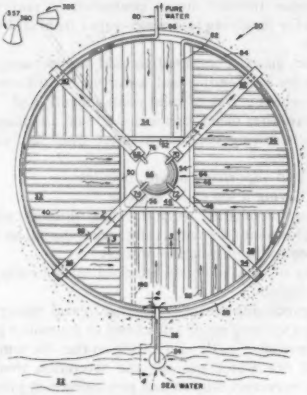
1. A distillation device comprising:
a first water transfer means for withdrawing contaminated water from a body of water having solid contaminants dissolved therein;
a grid connected to said first water transfer means so that contaminated water received from said body of water flows across said grid, said grid having an outer peripheral edge and an inner peripheral edge and comprising a

header located on said grid outer peripheral edge and fluidly connected to said first water transfer means so that contaminated water flows into said header from the body of water, said header being fluidly attached to said grid so that contaminated water flows from said header onto said grid whereby contaminated water flows from the body of water to said grid via said header, and a trough located on said grid inner peripheral edge and fluidly attached to said grid so that contaminated water flows into said trough from said grid, and means for transferring solar energy to said water flowing across said grid;

a water storage means having a side wall attached to said grid trough so that contaminated water flowing on said grid flows into said water storage means via said trough;

second water transfer means connected with said water storage means for removing contaminated water from said storage means;

a third water transfer means located in said trough and connected to said water storage means for transferring water from said trough to said water storage means and temperature control means connected to said third water transfer means for actuating said third water transfer means when the temperature of said water in said trough reaches or exceeds said predetermined temperature so that only water having a temperature which equals or exceeds



said predetermined temperature is transferred to said water storage means;

a heat exchange structure connected to said water storage means;

a recirculation apparatus mounted in said trough and connected to said header for recirculating said water from said trough back to said header prior to transferring water from said trough into said water storage means and temperature control means connected to said recirculation apparatus for actuating said apparatus when the temperature of said water in said trough falls below a predetermined temperature;

a vaporizer means connected to said heat exchange structure for separating said water from said solid contaminants dissolved therein, said vaporizer means having a solar concentrator means for transferring solar energy to said contaminated water flowing from said heat exchange structure into said vaporizer means;

vacuum producing means for producing a vacuum in said vaporizer means so that said contaminated water is vaporized under vacuum conditions to form water vapor and thereby separate said water from said solid contaminants, and solid removing means connected to said vaporizer means for removing said solid contaminants from said vaporizer means;

water vapor transfer means connected to said vaporizer means for removing said water vapor from said vaporizer means;

condenser means connected to said water vapor transfer means for condensing said water vapor to form distilled water which is free of solid contaminants; and

distillate transfer means connected to said condenser means for withdrawing condensed water from said condenser means; and

a heating grid, said heating grid comprising:

a base;

a plurality of interconnected grid sections mounted on said base and oriented horizontally to absorb solar energy incident thereupon;

a plurality of channel defining ribs on each of said grid sections for defining flow channels wherein water being distilled in the distillation apparatus flows across the heating grid;

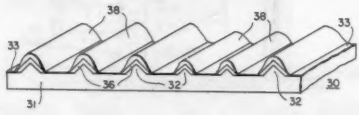
an antifriction coating on said grid which prevents the adherence of solid contaminants contained in said water in said grid while said water is flowing thereacross, said water remaining in contact with said grid until the temperature of said water reaches a predetermined level due to the heat transferred to said water from the sun via said grid.

4,199,408

METHOD OF FABRICATING A BODY HAVING A PLURALITY OF CONDUCTORS

Charles J. Sherman, Westminster, Colo., assignor to Western Electric Co. Inc., New York, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,724
Int. Cl.[2] C25D *5/02, 5/54, 7/06*
U.S. Cl. 204—15 **4 Claims**



1. A method of fabricating a body having a plurality of conductors, which comprises:

forming a dielectric body having a plurality of first body portions configured to enhance electrodeposition thereon relative to electrodeposition on a second body portion, said plurality of first body portions corresponding to the desired plurality of conductors;

depositing an electrically conductive coat on said body including at least said plurality of first body portions and said second body portion;

electroplating said coated body to form a first metal deposit on said plurality of first body portions and a second metal deposit on said second body portion, said first deposit being greater than said second deposit; and

etching said electroplated body to remove at least said second metal deposit to form a body having only said plurality of first body portions metal deposited.

4,199,409

RECOVERY OF HF FROM AN ALKYLATION UNIT ACID STREAM CONTAINING ACID SOLUBLE OIL

Frank W. Skraba, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 22, 1977, Ser. No. 770,552
Int. Cl.[2] B01D *3/34;* **C01B** *7/07, 7/19*
U.S. Cl. 203—39 **7 Claims**

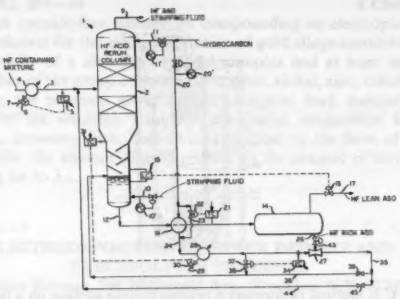
1. A method of recovering hydrofluoric acid, said method comprising:

stripping a mixture containing at least HF, water, and acid soluble oil by contacting the mixture with a vaporous hydrocarbon in a fractionation column;

recovering as an overhead product from said column a vaporous mixture of HF and vaporous hydrocarbon;

collecting a second mixture of HF, water and acid soluble oil in a lower portion of said column;

removing a portion of said second mixture from said column, cooling the thus removed portion of said second mixture to a temperature no higher than approximately 125° F;



phase separating the thus cooled portion of said second mixture into a first continuous acid soluble oil phase portion containing acid soluble oil which is substantially free of HF, and a second continuous acid soluble oil phase portion containing a major portion of the HF contained in the second mixture and acid soluble oil;

separating said second portion from said first portion; and

returning the thus separated second portion containing HF to said column.

4,199,410

PURIFICATION OF CRUDE ACRYLIC ACID

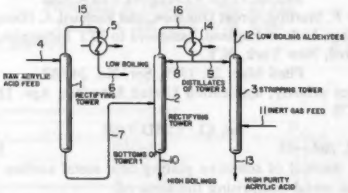
Tetsuya Ohrui; Michio Kato, both of Niihama; Masami Ayano, Saijo; Tsunejiro Kawaguchi, and Tadashi Abe, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 31, 1978, Ser. No. 929,696

Claims priority, application Japan, Aug. 4, 1977, 52-93789

Int. Cl.[2] B01D *3/34;* **C07C** *51/44, 57/04*

U.S. Cl. 203—49 **9 Claims**



1. A process for purifying crude acrylic acid comprising the steps of

(1) rectifying a crude acrylic acid consisting essentially of acrylic acid and low boiling impurities including acrolein (a) to remove initially a major portion of said low boiling impurities and then (b) to remove high boiling impurities either present in said crude acrylic acid or the high boiling impurities formed during the initial rectification, and then

(2) removing by stripping trace amounts of acrolein and other low boiling impurities with an inert gas at a liquid to gas molar ratio of about 2 to about 20, thereby forming a high purity acrylic acid containing acrolein and other low boiling impurities in a total quantity less than 100 ppm.

4,199,411

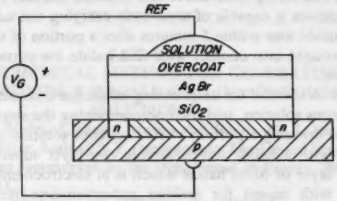
HALIDE ION-SELECTIVE DEVICES AND METHODS OF DETERMINING HALIDES

Sang H. Kim, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1978, Ser. No. 956,526

Int. Cl.[2] G01N *27/30, 27/46*

U.S. Cl. 204—1 T **25 Claims**



1. In a potentiometric device for the detection of halide ions in a solution under test, said device comprising a layer of silver halide in electrochemical contact with means for making potentiometric measurements related to halide ion concentration, said layer of silver halide in turn bearing a halide ion permeable overlayer of a cellulose ester which inhibits interference due to low molecular weight materials, the improvement comprising the presence in said cellulose ester overlayer of a polyol containing from 2 to 6 hydroxyl groups which results in an extended useful shelf life of said device.

17. A method for determining halide ion concentration in an aqueous solution comprising:

(a) contacting a halide ion permeable overlayer of a halide ion-sensitive electrode with a sample of said solution, said electrode comprising a layer of silver which is in electrochemical contact with a layer of silver halide which, in turn, bears as said halide ion-permeable overlayer, a layer of a cellulose ester containing a polyol having from 2 to 6 hydroxyl groups; and

(b) measuring the potential difference between the aqueous solution and the silver layer of the electrode.

4,199,412

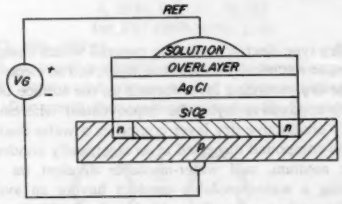
HALIDE ION-SELECTIVE DEVICES AND METHOD

Charles J. Battaglia, Rochester; Denise S. Secord, Webster, and Sang H. Kim, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1978, Ser. No. 956,527

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—1 T **39 Claims**



1. In a potentiometric device for the detection of halide ions in a solution, said device comprising: (1) a layer of silver halide in electrochemical contact with means for making potentiometric measurements related to halide ion concentration, and (2) a halide ion-permeable overlayer superposed on said layer of silver halide,

the improvement wherein said halide ion-permeable overlayer consists essentially of a composition that:

(a) is from about 1 to about 8 microns thick;

(b) has a diffusion coefficient of at least 2.5×10^{-10} cm^2/sec with respect to the halide ions to be detected; and

(c) has a permeability of less than 2×10^{-8} cm^2/sec to materials which could interfere with said detection of halide ions;

whereby said halide ion-permeable overlayer is capable of inhibiting interference due to the presence of one or more of said interfering materials in said solution, and said potentiometric device is capable of accurately carrying out said detection of halide ions within 5 minutes after a portion of said solution is brought into contact with said halide ion-permeable overlayer.

19. A method for determining halide ion concentration in an aqueous solution, said method comprising the steps of:

(a) bringing a portion of said aqueous solution into contact with a halide ion-permeable overlayer superposed on a layer of silver halide which is in electrochemical contact with means for making potentiometric measurements related to halide ion concentration, said halide ion-permeable overlayer consisting essentially of a composition: (1) being from about 1 to about 8 microns thick; (2) having a diffusion coefficient of at least 2.5×10^{-10} cm^2/sec with respect to the halide ions whose concentration is to be determined; and (3) having a permeability of less than 2×10^{-8} cm^2/sec to materials which could interfere with said determination of halide ion concentration; and

(b) measuring the difference in potential between said portion of aqueous solution and said silver halide layer within 5 minutes after said portion of aqueous solution is brought into contact with said halide ion-permeable overlayer.

4,199,413

ELECTRIC RECORDING MATERIAL AND ELECTRIC RECORDING PROCESS

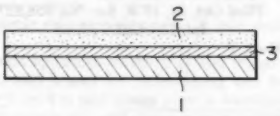
Nobuhiro Miyakawa, Kobe; Hiroshi Kokado, and Eiichi Inoue, both of Tokyo, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 766,754, Feb. 8, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 6,021

Claims priority, application Japan, Feb. 19, 1977, 52/16514

Int. Cl.[2] G01D *15/06, 15/34*

U.S. Cl. 204—2 **8 Claims**



1. In a dry type electric recording material which comprises a substrate, an electrically conductive layer, and an electrically conductive dry recording layer formed on the surface of said electrically conductive layer, the improvement wherein said electrically conductive dry layer comprises a water-insoluble divalent tin compound dispersed in an electrically conductive polymeric medium, said water-insoluble divalent tin compound being a water-insoluble product having an average particle size not larger than 3μ and being obtained by reacting a tin (II) halide with an alkaline agent in an aqueous solution, the amount of the alkaline agent being 0.2 to 1 equivalent based on the tin (II) halide, said water-insoluble divalent tin compound being present in the electrically conductive dry recording layer in an amount of 200 to 1000 parts by weight per 100 parts by weight of the electrically conductive polymeric medium, said recording layer having a volume resistivity of from 10^3 to 10^7 Ω-cm.

4,199,414

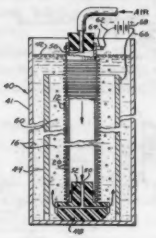
METHOD OF PRODUCING FINNED HEAT TRANSFER TUBE WITH POROUS BOILING SURFACE

Ming S. Shum, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 867,856, Jan. 9, 1978. This application Mar. 26, 1979, Ser. No. 23,922

Int. Cl.[2] C25D *7/04, 15/00*

U.S. Cl. 204—15 **2 Claims**



1. A method of forming a porous boiling surface on a finned metal tube comprising the steps of taking a finned tube and coating the tips of its fins with a non-conductive coating; placing the finned tube in a plating solution containing conductive particles and in close proximity to a tubular source of metal to be plated onto the finned tube; connecting said finned tube and said tubular source to a source of electrical current so that metal from said tubular source will be plated onto said fins in the areas thereof which are not coated with said non-conductive coating; agitating said plating solution to keep said conductive particles in suspension until they are electrically attracted to the non-coated portions of said fins; continuing said plating step until the plating thickness builds up outwardly from the fin surfaces and around at least certain of the conductive particles which are attracted thereto.

4,199,415

SELECTIVE PLATING PROCESS

Henley F. Sterling, Great Dunmow, and Richard A. Humphreys, Harlow, both of England, assignors to ITT Industries, Incorporated, New York, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,583

Claims priority, application United Kingdom, Apr. 11, 1978, 14118/78

Int. Cl.[2] C25D *5/02*

U.S. Cl. 204—15 **1 Claim**

1. A method of selective plating of a metal surface with a precious metal comprising the steps of:

producing a removable mask on a metal surface to be plated, which mask covers the area to be plated, said mask being formed of a volatile material;

electro-painting the metal surface in an electrolytic bath with an organic resin paint, said paint covering the portion or portions of the metal surface not covered by said removable mask;

heating the coating of paint to simultaneously stove and cure the paint and remove said mask of volatile material so as to leave the area to be plated with the precious metal unmasked; and

electro-plating the un-masked area of the metal surface with the precious metal.

4,199,416

COMPOSITION FOR THE ELECTROPLATING OF GOLD

Harry Middleton, and Paul C. Hydes, both of Reading, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed May 2, 1978, Ser. No. 902,113
Claims priority, application United Kingdom, May 3, 1977, 18450/77; Apr. 5, 1978, 13116/78
Int. Cl.[2] C25D 3/62
U.S. Cl. 204—44 1 Claim

1. A cyanide-free mixture for compounding an electroplating solution for the electrodeposition of gold alloys consisting essentially of a nitrosulphito gold complex and at least one member of the group consisting of copper, nickel, zinc, cobalt, silver, the platinum group metals, cadmium, lead, mercury, arsenic, tin, selenium, tellurium, manganese, magnesium, indium, antimony, iron, bismuth and thallium, in the form of a sulphite, the amount of gold relative to the amount of metal being up to 2:1.

4,199,417

ELECTRODEPOSITION OF BLACK DEPOSIT AND ELECTROLYTES THEREFOR

Mariano Borruso, 746 McDonald Ave., Brooklyn, N.Y. 11218

Filed Nov. 13, 1978, Ser. No. 960,161
Int. Cl.[2] C25D 3/56
U.S. Cl. 204—44 20 Claims

1. An aqueous alkaline bath composition for electroplating a black metallic co-deposit on a platable substrate, comprising, in solution, about 1.0 oz/gallon of antimony oxide, about 1.0 oz/gallon of copper cyanide, about 1.7 oz/gallon of sodium cyanide, and about 8.0 oz/gallon of sodium hydroxide.

4. An aqueous alkaline bath composition for electroplating a black metallic co-deposit on a platable substrate, comprising, in solution, about 1.0 oz/gallon of zinc oxide, about 1.0 oz/gallon of antimony oxide, and about 8.0 oz/gallon of sodium hydroxide.

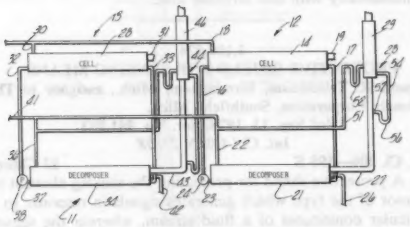
6. An aqueous alkaline bath composition for electroplating a black metallic co-deposit on a platable substrate, comprising, in solution, about 1.0 oz/gallon of antimony oxide, about 0.5 oz/gallon of nickel cyanide, about 0.5 oz/gallon of sodium cyanide, and about 8.0 oz/gallon of sodium hydroxide.

4,199,418

MERCURY RECOVERY SYSTEM IN ELECTROLYTIC PROCESS

Frank Boggs, Jr., Baton Rouge, La., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 8, 1979, Ser. No. 37,327
Int. Cl.[2] C25B 1/16, 1/26, 9/00
U.S. Cl. 204—99 8 Claims



1. In a process for making alkali hydroxide and chlorine in a plurality of electrolytic cell units of the amalgam type wherein a decomposer is provided with each cell unit and wherein alkali-metal amalgam formed in the cell is reacted with water in the decomposer to form alkali hydroxide and hydrogen, the improvement comprising the steps of

passing the hydrogen and the water and mercury vapors carried therewith through an overhead outlet into a condenser,

collecting mercury and water condensate from the condenser in a liquid separator,

returning the mercury to the decomposer back through the overhead outlet, and

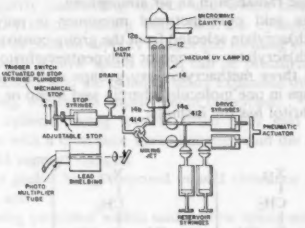
recycling the water condensate to the decomposer at the normal water-feed location.

4,199,419

PHOTOCHEMICAL METHOD FOR GENERATING SUPEROXIDE RADICALS (O_2^-) IN AQUEOUS SOLUTIONS

Richard A. Holroyd, Stony Brook, and Benon H. J. Bielski, Wading River, both of N.Y., assignors to The United State of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 28, 1978, Ser. No. 973,845
Int. Cl.[2] B01J 1/10; B01K 1/00
U.S. Cl. 204—157.1 R 13 Claims



5. A photochemical process for generating superoxide radicals (O_2^-) in an aqueous solution including the steps of forming a solution of sodium formate and oxygenated water, buffering the solution at a high pH, and subjecting the buffered solution to an intense flux of far-ultraviolet light, the intense flux of far-ultraviolet light acting to photodecompose the solution and form the superoxide radical (O_2^-).

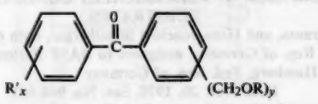
4,199,420

ALKOXYMETHYLBENZOPHENONES AS PHOTOINITIATORS FOR PHOTOPOLYMERIZABLE COMPOSITIONS AND PROCESS BASED THEREON

James M. Photis, Ridgefield, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 894,052, Apr. 6, 1978. This application Feb. 9, 1979, Ser. No. 10,762
Int. Cl.[2] C08F 8/00, 2/46
U.S. Cl. 204—159.15 15 Claims

1. A photopolymerizable composition comprising an ethylenically unsaturated compound and a photoinitiating amount of an alkoxymethylbenzophenone having the formula:



wherein R is hydrocarbon of 1 to 20 carbon atoms, alkoxysubstituted alkylene where the alkylene moiety has 2 to 12 carbon atoms and the alkoxy 1 to 12 carbon atoms or $-(CH_2CH_2O)_n-R''$ wherein R'' is alkyl of 1 to 12 carbon atoms and n is an integer from 2 to 5; R' is hydrogen, halogen or $-CH_2OR$; and x and y are independently selected integers from 1 to 5.

4,199,421

COATING COMPOSITION AND A METHOD FOR PRODUCING A SYNTHETIC RESIN MOLDED PRODUCT HAVING AN ABRASION RESISTANT SURFACE

Kazumasa Kamada; Kenji Kushi, both of Ohtake; Keisuke Yoshihara, Yokohama, and Hideo Nakamoto, Nagoya, all of Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Filed Feb. 17, 1978, Ser. No. 878,830

Claims priority, application Japan, Feb. 23, 1977, 52/19038

Int. Cl.[2] C08F *2/46, 8/00;* **B05D** *3/06*

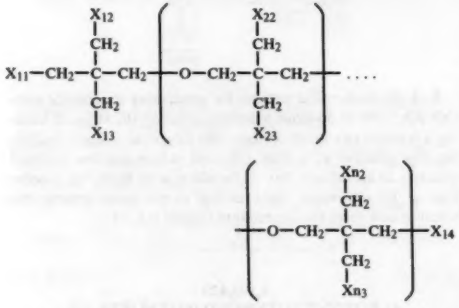
U.S. Cl. 204—159.22 **8 Claims**

1. A coating composition which comprises 100 parts by weight of a monomer mixture (A) comprising 30 to 98% by weight of at least one polyfunctional monomer having at least three groups selected from acryloyloxy group and methacryloyloxy group in one molecule and

70 to 2% by weight of tetrahydrofurfuryl methacrylate, tetrahydrofurfuryl acrylate, ethyl carbitol acrylate, or ethyl carbitol methacrylate, and

0 to 10 parts by weight of a photosensitizer wherein said composition can form a cross-link-hardened film which is excellent in abrasion resistance, upon irradiation with actinic radiation in an air atmosphere,

wherein said polyfunctional monomer is polyfunctional (meth)acrylate selected from the group consisting of poly (meth)acrylates of mono or polypentaerythritol having at least three methacryloyloxy groups and/or acryloyloxy groups in one molecule wherein said mono or polypentaerythritol has the formula:



(wherein at least three of X_{11}, X_{12}, X_{13}, X_{22}, X_{23} . . . Xn_2, Xn_3 and X_{14} are CH_2═CR—COO— group and the remainder are —OH group, n is an integer of 1–5 and R is hydrogen atom or methyl group),

wherein said tetrahydrofurfuryl (meth)acrylate or ethyl carbitol (meth)acrylate has a boiling point of at least 150° C. at normal pressure and a viscosity of not more than 20 centipoises at 20° C.

4,199,422

PROCESS FOR CATAPHORETICALLY COATING THE SURFACES OF ELECTRICALLY CONDUCTING SUBSTRATES

Udo Strauss, and Hans-Joachim Streitberger, both of Münster, Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,401

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1977, 2751498

Int. Cl.[2] C25D *13/10*

U.S. Cl. 204—181 C **12 Claims**

1. In a method for cataphoretically coating the surfaces of electrically conducting substrates acting as a cathode using a coating bath comprising aqueous solutions, aqueous dispersions or mixtures thereof of salts of cationic film forming agents with organic acids, inorganic acids or mixtures thereof, said coating bath containing dissolved ions of chloride by passing a DC current between an anode and said cathode immersed in said coating bath, the improvement comprising:

said anode comprising an electrode of stainless steel containing at least 12% Cr, 0 to 17% Ni, 0 to 3% Mo, 0 to 0.5% C, 0 to 1% Si, 0 to 2% Mn and trace amounts of Al, Ti, Nb and Ta and in addition to said ions of chloride comprising ions of nitrate, nitrite or mixtures thereof in a weight ratio from about 0.01 to 8 parts of chloride ions to 1 part of ions of nitrate, nitrite or mixtures thereof.

4,199,423

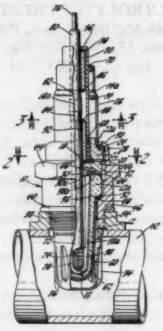
HEATED ELECTROLYTE EXHAUST GAS SENSOR AND METHOD OF MAKING IT

Gamdur S. Mann, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1978, Ser. No. 963,828

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 S **6 Claims**



1. In a coaxial cylindrical galvanic oxygen responsive exhaust gas sensor having a metal shell, a solid electrolyte member, an electrode terminal tube and heater subassembly, said shell, electrolyte member, and subassembly being coaxially assembled, the improvement wherein the subassembly includes a pair of annular members coaxially disposed between the heater and terminal tube for thermal and electrical separation and for alignment of the heater in the terminal tube, axially opposed shoulders on said heater for interlock with said annular members, facing internal shoulders on said terminal tube for coaction with said heater shoulders through said annular members, whereby said heater is insulatingly coaxially interlocked in subassembly with said terminal tube.

4,199,424

PROTECTIVE SHIELD FOR SENSING MEANS

Bernard R. Teitelbaum, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 13, 1978, Ser. No. 941,883

Int. Cl.[2] G01N *27/58*

U.S. Cl. 204—195 S **13 Claims**

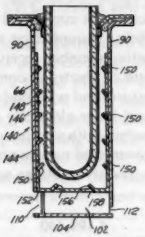
1. A protective shield for protecting the sensing element of a sensor of the type which generates signals in response to a particular constituent of a fluid stream, wherein the sensor includes a housing and where the sensing element protrudes therefrom, the protective shield comprising:

shield means, for protecting said sensing element from direct contact with particulates within the fluid stream, said shield means surrounding the protruding portion of the sensing element and spaced therefrom to form a chamber about said sensing element, said shield means having one end adapted to fit to said housing and an opposite end, said

shield further having fluid exit ports proximate to said one end, permitting fluid to flow out of said chamber,

said shield means further having turbulence generating means for causing fluid flow to become turbulent disposed along its interior, including tabs protruding therefrom;

particulate trap means protruding into said fluid stream attached to said opposite end of said shield means for directionally intercepting a portion of the fluid stream, including a member having a top element attached to said



opposite end of said shield means, a bottom element spaced a predetermined distance from said top element and a wall connecting said top element and said bottom element to form an enclosed fluid receiving cavity, said wall having a fluid entrance port directed into said fluid stream interconnecting the external fluid stream with said fluid receiving cavity; and where said top element further has a fluid communications passage connecting said fluid receiving cavity with said chamber.

4,199,425

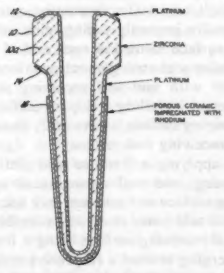
SOLID ELECTROLYTE EXHAUST GAS SENSOR WITH INCREASED NO_x SENSITIVITY

Robert M. Sinkevitch, Belle River, Canada, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1978, Ser. No. 964,924

Int. Cl.² G01N 27/58

U.S. Cl. 204—195 S **3 Claims**



1. In a solid electrolyte exhaust gas oxygen responsive sensor having a catalytic exhaust gas electrode for producing chemical equilibrium of oxidizable exhaust gas constituents and a porous protective coating on said electrode, the improvement wherein rhodium is included in said protective coating to attain a more complete chemical equilibrium and enhance sensor response to oxides of nitrogen.

4,199,426

DEVICE FOR FABRICATING THIN-WALLED METAL CYLINDERS

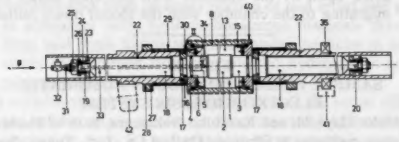
Heinrich Voegelin, Wiler b. Utzenstorf, Switzerland, assignor to Fritz Buser AG Maschinenfabrik, Switzerland

Filed Dec. 14, 1978, Ser. No. 969,573

Claims priority, application Switzerland, Dec. 29, 1977, 16215/77

Int. Cl.² C25D 7/04

U.S. Cl. 204—212 **7 Claims**



1. Apparatus for the manufacture of a thin, hollow, closed-wall or perforated-wall metal cylinder by electro-plating a metal on a smooth dye cylinder having accordingly a completely or partly conducting surface and which rotates submerged in an electro-plating bath, said die cylinder being supported at its ends on support flanges and forming with these a pressure-tight hollow space which can be pressurized by a pressure medium, said die cylinder being expanded during the electroplating, where the improvement comprises:

said die cylinder being loosely fitted over said support flanges with a clearance space between said die cylinder and said support flanges,

a resilient gasket being disposed in said clearance space to seal it, and

means being provided within said hollow space within said die cylinder for bridging electrically said clearance space between said die cylinder and said support flanges.

4,199,427

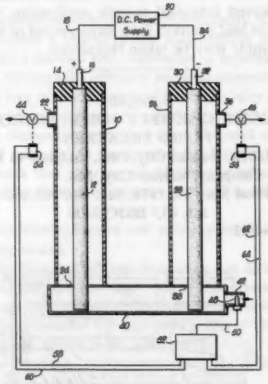
ELECTROLYTIC TREATER

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Filed Dec. 26, 1978, Ser. No. 972,931

Int. Cl.² C25B 9/00

U.S. Cl. 204—263 **6 Claims**



1. Apparatus for treating a liquid having electrolytic properties, said apparatus including:

a pair of separate chambers each having an electrode therein;

means for connecting said electrodes across a source of electrical potential;

conduit means interconnecting said chambers for liquid communication therebetween and the completion of an

electric circuit when said liquid is contained within said conduit means and said chambers in contact with said electrodes;

an effluent outlet for each of said chambers respectively;

a supply means coupled with said chambers for introducing said liquid into the same and for exposing solids suspended within said liquid to the electrodes; and

means for selectively closing down said outlet of either chamber independently of the other without disrupting said liquid communication between the chambers so as to maintain said electric circuit intact and yet keep solids acted upon by the chamber with the open outlet from migrating to the chamber with the closed down outlet.

4,199,428

SAMPLE FEEDER FOR USE IN AUTOMATIC ELECTROPHORESIS SYSTEM

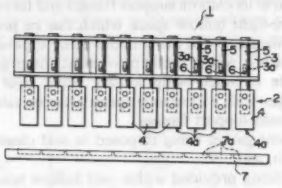
Yoshiaka Hayashi, and Kazuhiko Nakamura, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1979, Ser. No. 25,931

Claims priority, application Japan, Apr. 27, 1978, 53-55253[U]

Int. Cl.² G01N *27/28, 33/16*

U.S. Cl. 204—299 R **13 Claims**



1. A sample feeder for use in an automatic electrophoresis system, comprising:

(a) a plurality of sample holders each adapted to hold a sample to be tested by said electrophoresis system;

(b) carriage means supporting said sample holders at spaced locations thereon; and

(c) means for moving said carriage relative to a sample application position, said means moving said carriage in such a manner that each of said sample holders is successively moved into said sample application position and retained in said position for a finite period of time in order that a sample may be taken therefrom.

4,199,429

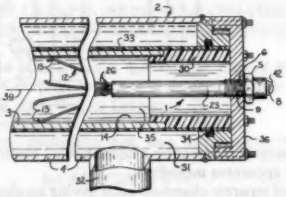
PILOT LIGHT ASSEMBLY FOR ELECTROSTATIC FLUID TREATERS

Roy C. McMahon, Kansas City, Mo., assignor to Electrostatic Equipment Company, Kansas City, Mo.

Filed May 10, 1978, Ser. No. 904,405

Int. Cl.² B03C *9/00*

U.S. Cl. 204—302 **11 Claims**



10. In combination:

(a) a pilot light assembly and an electrostatic fluid treater having an inner hollow electrode with an interior conductive surface which is accessible through means forming an aperture in an outer electrode thereof;

(b) said assembly including:

(1) a pilot light socket having a pair of conductors,

(2) a light bulb received in said socket, said bulb having a pair of terminals connected respectively to said socket conductors,

(3) a conductive mounting member on said socket connected to one of said socket conductors,

(4) a resistor connected to the other of said socket conductors, and

(5) spring contact means connected to said resistor; and

(c) said assembly being mounted on said treater with said conductive mounting member received in said outer electrode aperture and in electrical contact with said means forming said aperture, and with said spring contact means extending into said inner electrode and resiliently urged into electrical contact with said interior surface, whereby said light bulb is energized only in response to the application of a treater operative voltage across said electrodes.

4,199,430

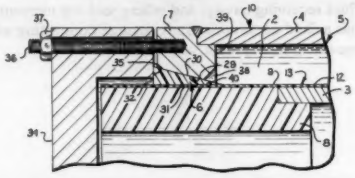
SEAL CONSTRUCTION FOR ELECTROSTATIC FLUID TREATERS

Roy C. McMahon, Kansas City, Mo., assignor to Electrostatic Equipment Company, Kansas City, Mo.

Filed Jun. 12, 1978, Ser. No. 914,847

Int. Cl.² B03C *9/00*

U.S. Cl. 204—302 **6 Claims**



1. In combination:

an electrostatic fluid treater having an elongated, cylindrical inner electrode assembly positioned coaxially within an elongated, cylindrical shell with an annular flow passage therebetween, said inner electrode assembly including an inner electrode and said shell including an outer electrode; and a seal construction for sealing engagement between respective opposite ends of said inner electrode assembly and said shell, said seal construction comprising:

(a) a generally inwardly facing, circumferential seal receiving surface formed at each end of said shell;

(b) an annular seal arrangement positioned in sealing engagement with said seal receiving surface, said seal arrangement including a sloping surface engaging said seal receiving surface, an inwardly facing seal face, and a force receiving end surface;

(c) means applying a force to said end surface thereby compressing said seal arrangement against said seal receiving surface and said seal face into sealing engagement with said inner electrode assembly;

(d) said seal receiving surface being a frusto-conical surface diverging toward a respective end of said shell;

(e) said sloping surface being a generally outwardly facing, frusto-conical surface engaging said seal receiving surface;

(f) said seal arrangement including a circumferential apex portion adjacent a convergence of said seal face and the frusto-conical surface thereof; and

(g) the frusto-conical side of said apex portion being exposed within said flow passage whereby fluid under

pressure within said passage enhances sealing engagement between the seal face side of said apex portion and said inner electrode assembly.

4,199,431

OXIDATION OF PETROLATUMS IN THE PRESENCE OF HALIDE SALTS

Donald D. Carlos, Grayson, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 22, 1978, Ser. No. 918,135
Int. Cl.[2] C07C *27/10*; C10G *43/02*
U.S. Cl. 208—3 **11 Claims**

1. A process for oxidizing a petrolatum having an average of 20 to 100 carbon atoms per molecule comprising blowing an oxidizing gas through a liquid mass of said petrolatum at a temperature of between about 150° and about 180° C. in contact with water and a catalytic amount of a halide salt selected from the group consisting of alkali metal halides, alkali earth metal halides, ammonium halides, N-substituted ammonium halides and mixtures thereof the ratio by weight of water to halide salt being between about 1 and about 5.

4,199,432

STAGED TURBULENT BED RETORTING PROCESS

Paul W. Tamm, Oakland, and Gordon E. Langlois, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 22, 1978, Ser. No. 889,156
Int. Cl.[2] C10G *1/00*; C10B *47/24*
U.S. Cl. 208—8 R **17 Claims**

1. In a retorting process wherein fresh hydrocarbon-containing solid particles are retorted by passing said particles into an upper portion of a vertically elongated retort and downwardly therethrough, heating said fresh hydrocarbon-containing solid particles in said retort to retorting temperatures sufficiently high to drive off hydrocarbonaceous materials from said fresh hydrocarbon-containing solid particles, removing said hydrocarbonaceous materials from an upper portion of said retort, and withdrawing the resulting retorted particles from a lower portion of said retort, the improvement which comprises:

(a) maintaining a non-oxidizing atmosphere in said retort;

(b) accomplishing said heating of said fresh hydrocarbon-containing particles primarily by heat transfer to said fresh hydrocarbon-containing particles of heat from hot solid heat carrier particles;

(c) passing said hot solid heat carrier particles into an upper portion of said retort;

(d) passing a non-oxidizing gas upwardly through said retort from a lower portion thereof, at a gas velocity between 1 foot/second and 5 feet/second;

(e) maintaining the size of both said fresh hydrocarbon-containing particles and said heat carrier particles passed into said retort in a size range which includes particles which are fluidizable at said gas velocity and particles which are non-fluidizable at said gas velocity;

(f) passing said fluidizable fresh hydrocarbon-containing particles and said fluidizable heat carrier particles downwardly through said retort as a downwardly moving columnar bed of particles fluidized by and in countercurrent contact with said upwardly passing gas, at a first rate low enough for the residence time of said fluidizable particles in said retort to be at least sufficient for substantially complete retorting of said fluidizable fresh hydrocarbon-containing particles in said retort;

(g) passing said non-fluidizable fresh hydrocarbon-containing particles and said non-fluidizable heat carrier particles downwardly through said retort and through said columnar bed of particles of countercurrent contact with said upwardly passing gas, at a second rate faster than said first rate and slow enough for the residence time of said non-fluidizable fresh hydrocarbon-containing particles in said retort to be sufficient for at least substantial retorting of said non-fluidizable fresh hydrocarbon-containing particles in said retort;

(h) substantially limiting backmixing and slugging of the fluidizable and non-fluidizable particles in said retort by passing said downwardly moving fluidizable and non-fluidizable particles through a plurality of dispersers disposed in the interior of said retort, said dispersers being constructed and disposed in said retort such that stable fluidization of said fluidizable particles is maintained and such that the residence time of said non-fluidizable particles is increased;

(i) withdrawing from an upper portion of said retort said gas in admixture with hydrocarbonaceous materials driven from said fresh hydrocarbon-containing particles in said retort and stripped from the retorted hydrocarbon-containing particles by said gas; and

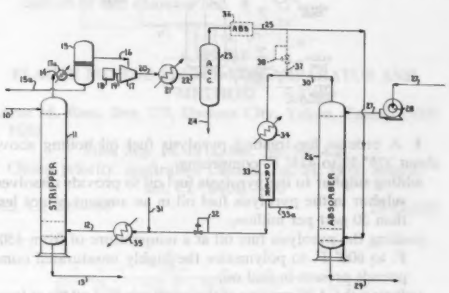
(j) withdrawing from said lower portion of the retort effluent solids including said resulting retorted hydrocarbon-containing particles and said heat carrier particles.

4,199,433

SOLVENT DEHYDRATION SYSTEM

Harold O. Button, Cape May, N.J.; Thomas F. McCall, Fairway, and Donald W. Meyer, Overland Park, both of Kans., assignors to The C. W. Nofsinger Company, Kansas City, Mo.

Filed Feb. 5, 1979, Ser. No. 9,538
Int. Cl.[2] C10G *43/08*
U.S. Cl. 208—31 **14 Claims**



1. In a continuous process of solvent dewaxing of lubricating oil stocks, wherein a charge stock wax-bearing oil stream is first mixed with a solvent and, thereafter, a separation is made of this mixed stream into primary product streams of (a) substantially wax free oil and solvent, (b) substantially oil free wax and solvent and, sometimes, (c) slack wax and solvent, the solvent being thereafter separated from the said oil, wax and slack wax and recycled to the process for further mixing with said charge stock wax-bearing oil stream, the improvement in solvent separation from said primary product streams comprising:

continuously flowing one of said primary product streams to a stripping vessel,

continuously flowing solvent free inert gas in counterflow contacting relationship with said primary product stream in said stripping vessel to strip solvent therefrom,

removing substantially solvent free primary product from said stripping vessel as an end product,

separately removing solvent rich inert gas from said stripping vessel,

first compressing and thereafter condensing the said solvent rich inert gas,

separating solvent from the inert gas after the compression and condensation thereof,

passing the relatively solvent free inert gas to an absorber vessel,

flowing a quantity of the charge stock wax-bearing oil

stream which is being solvent dewaxed in counterflow contacting relationship with said inert gas in the absorber vessel to absorb substantially all of the remaining solvent therefrom,

passing the substantially solvent free inert gas from the absorber vessel to the stripping vessel for stripping use in the latter, and

passing the solvent containing charge stock oil to the dewaxing process.

4,199,434

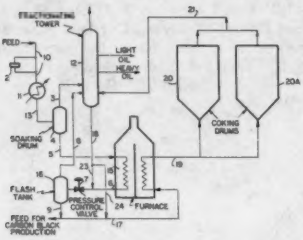
FEEDSTOCK TREATMENT

Morgan C. Sze, Upper Montclair; Thomas M. Bennett, Scotch Plains, and Harold Unger, Fort Lee, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 668,752, Mar. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 514,356, Oct. 15, 1974, abandoned. This application Feb. 13, 1978, Ser. No. 876,882

Int. Cl.[2] C09C *1/48;* C10C *9/14*

U.S. Cl. 208—40 **12 Claims**



1. A process for treating pyrolysis fuel oil boiling above about 375° F. to 425° F. comprising:

adding sulphur to the pyrolysis fuel oil to provide dissolved sulphur in the pyrolysis fuel oil in an amount of not less than 30 part per million;

soaking the pyrolysis fuel oil at a temperature of from 450° F. to 600° F. to polymerize the highly unsaturated compounds present in said oil;

reducing the API gravity of the pyrolysis fuel oil by at least 1° based on the material boiling above 500° F. to provide a treated pyrolysis fuel oil having an API gravity of no greater than −3° based on the material boiling above 500° F., said reducing being effected by heating the soaked pyrolysis fuel oil in a heating zone to a temperature of from 850° F. to 1100° F. at an outlet pressure of from 300–600 psig and for a residence time to effect said reducing of API gravity; and

recovering the treated pyrolysis fuel oil.

4,199,435

NO_x CONTROL IN CRACKING CATALYST REGENERATION

Donald O. Chessmore, Pleasant Hill, and Charles E. Rudy, Jr., El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 4, 1978, Ser. No. 965,979

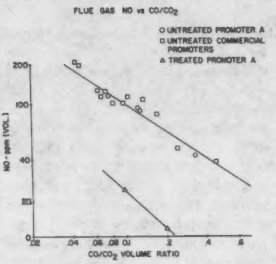
Int. Cl.[2] C10G *11/04;* B01J *8/24, 23/94*

U.S. Cl. 208—113 **6 Claims**

1. A process for cracking hydrocarbons in the absence of externally supplied molecular hydrogen comprising:

(1) contacting steam with a carbon monoxide combustion promoter comprising a combustion-promoting metal or compound of a metal selected from platinum, palladium, iridium, osmium, ruthenium, rhodium, rhenium and copper associated with at least one particulate porous inorganic solid at a temperature of 760° C. to 1100° C. and a steam pressure of 1 atmosphere to 15 atmospheres for a period of from 2 hours to 100 hours;

(2) cycling particulate cracking catalyst between a cracking zone and a catalyst regeneration zone, in a catalytic cracking system;



(3) cracking said hydrocarbons in contact with said catalyst at cracking conditions in said cracking zone whereby coke is formed on said catalyst; and

(4) burning coke off said catalyst with an oxygen-containing and nitrogen-containing gas at regeneration conditions in said regeneration zone in the presence of said combustion promoter.

4,199,436

PROCESS FOR STEAM-DEALKYLATING ALKYLAROMATIC HYDROCARBONS

Philippe Courty, Houilles, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 12, 1979, Ser. No. 11,608

Int. Cl.[2] C07C *3/58, 15/06;* C10G *39/00;* B01J *23/64*

U.S. Cl. 208—124 **10 Claims**

1. A process for steam-dealkylating a feedstock comprising at least one alkylaromatic hydrocarbon, in the presence of a catalyst comprising an alumina carrier and, by weight with respect to the catalyst, 0.1 to 2% of at least one group VIII noble metal, selected from ruthenium, rhodium, palladium, osmium, iridium and platinum, 0.05 to 2% of at least one metal from group I_B, selected from copper, silver and gold and 0.01 to 5% of at least one alkali metal selected from lithium, sodium, potassium, rubidium and cesium.

4,199,437

PROCESS FOR STEAM DEALKYLATION OF AROMATIC HYDROCARBONS

Philippe Courty, Houilles; Jean-Francois Le Page; Andre Sugier, both of Rueil Malmaison, and Jean Cosyns, Maule, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Feb. 23, 1979, Ser. No. 14,400

Claims priority, application France, Feb. 24, 1978, 78 05367

Int. Cl.[2] B01J *23/64;* C07C *3/58, 15/06;* C10G *35/08*

U.S. Cl. 208—124 **7 Claims**

1. A process for steam-dealkylating a charge containing at least one alkylaromatic hydrocarbon, in the presence of a catalyst containing an alumina carrier and, by weight with respect to the catalyst, from 0.1 to 2% of at least one metal from group VIII, selected from ruthenium, rhodium, palladium, osmium, iridium and platinum, from 0.05 to 0.8% of rhenium and from 0.01 to 5% of at least one alkali metal selected from lithium, sodium, potassium, rubidium and cesium.

4,199,438

HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 15, 1978, Ser. No. 905,907
Int. Cl.[2] C10G *35/08*
U.S. Cl. 208—139 20 Claims

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % tantalum, and about 0.1 to about 3.5 wt. % halogen; wherein the platinum group metal, catalytically available cobalt, and tantalum are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the tantalum is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

4,199,439

PROCESS FOR HYDROREFINING A HYDROCARBON UTILIZING A NON-STOICHIOMETRIC VANADIUM SULFIDE CATALYST

John G. Gatsis, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 2, 1979, Ser. No. 26,474
Int. Cl.[2] C10G *23/02*
U.S. Cl. 208—215 6 Claims

1. A process for hydrorefining a hydrocarbon charge stock which comprises reacting an admixture of said charge stock with hydrogen and with a colloidally dispersed non-stoichiometric vanadium sulfide catalyst which is prepared according to the following method:

(a) contacting vandaium oxide with ammonium sulfide at a temperature and pressure sufficient to form an ammonium salt of the vanadium sulfide;

(b) neutralizing with an acid, the resulting ammonium salt of the vanadium sulfide derived from step (a) in a non-oxidative atmosphere to form said vanadium sulfide catalyst; and

(c) passing said vanadium sulfide catalyst from step (b) to form said admixture with said charge stock and hydrogen.

4,199,440

TRACE ACID REMOVAL IN THE PRETREATMENT OF PETROLEUM DISTILLATE

Thomas A. Verachtert, Wheeling, Ill., assignor to UOP Inc., Des Plaines, Ill.

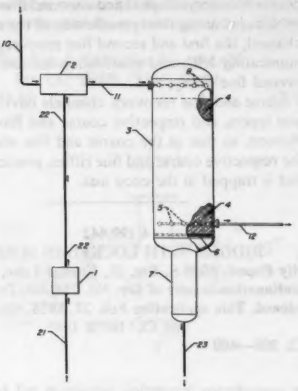
Continuation-in-part of Ser. No. 794,153, May 5, 1977, abandoned. This application Aug. 24, 1978, Ser. No. 936,427
Int. Cl.[2] C10G *25/12, 19/02*
U.S. Cl. 208—230 7 Claims

1. A process for the pretreatment of a sour petroleum distillate before said distillate is treated to effect the oxidation of the mercaptans contained therein, said pretreatment being performed on said distillate to neutralize acid concentrations of naphthenic acids, carboxylic acids and hydrogen sulfide which comprises:

(a) admixing said distillate with an aqueous base solution containing from about 100 to about 200% of the stoichiometric amount of base required to neutralize the acidic concentration of said distillate;

(b) passing said admixture through a fixed bed consisting of charcoal particles having a particle size distribution of from about 0.6 to about 2 mm. under non-oxidation conditions at a liquid hourly space velocity of from about 0.5 to about 20 and coalescing said aqueous phase of said admixture;

(c) recovering said sour petroleum distillate without the presence of any oxidation products from step (b) and



substantially free of said acidic contaminants from the lower portion of said charcoal bed; and

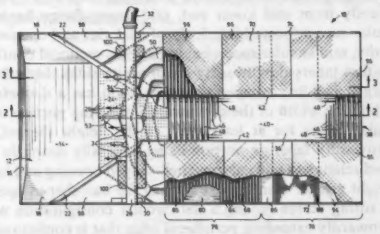
(d) withdrawing said coalesced aqueous phase from the bottom of said charcoal bed.

4,199,441

PLACER MINING SLUICE BOX APPARATUS AND METHOD

Lorne M. Ross, Box 275, Dawson City, Yukon, Canada (Y0B 1G0)

Filed Sep. 14, 1978, Ser. No. 942,426
Claims priority, application Canada, Jul. 31, 1978, 308435
Int. Cl.[2] B03B *7/00*
U.S. Cl. 209—44 13 Claims



1. Apparatus for use in high volume placer mining operations to separate and recover precious metals, such as gold, from aggregate material, the apparatus comprising:

a sluice box having an inlet trough and a coarse recovery channel leading therefrom and defining an outlet;

a water manifold adapted to be connected to a slurry of water under pressure for washing aggregate material in the inlet trough to form a slurry, said sluice box being adapted to be inclined so that the slurry passes through the sluice box from the inlet to the outlet;

the inlet trough having a punch plate bottom located adjacent to the coarse recovery channel, the punch plate bottom defining a plurality of openings for passing fine slurry therethrough and permitting coarse slurry to pass thereover into the coarse recovery channel;

a distribution section located below said punch plate bottom, said distribution section including a floor having first and second transversely and downwardly inclined portions, a ramp inclined upwardly and longitudinally of the sluice

box axis, and a plurality of angularly disposed vanes, so that the fine slurry is evened and spread transversely of the sluice box axis;

a first fine recovery channel located along one side of the coarse recovery channel and a second fine recovery channel located along the opposite side of the coarse recovery channel, the first and second fine recovery channels communicating with said distribution section to receive said evened fine slurry; and

the coarse and fine recovery channels having bottom coco mat layers, and respective coarse and fine riffles located thereon, so that as the coarse and fine slurries pass over the respective coarse and fine riffles, precious metal settles and is trapped in the coco mat.

4,199,442

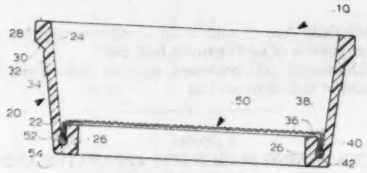
RIDDLE WITH LOCKED-IN SCREEN

Anatoliy Popow, 6009 S. Rte. 31, Crystal Lake, Ill. 60014

Continuation-in-part of Ser. No. 746,368, Dec. 1, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 881,636

Int. Cl.² B07B *1/46*

U.S. Cl. 209—408 **1 Claim**



1. A riddle comprising a molded plastic rim having integral upper and lower flanges, and a sifting screen connected to the lower flange of said rim, said rim being formed in the shape of an inverted frusto-conical configuration with upper and lower ends, said integral upper flange being a solid thickened mass and extending outwardly from said upper end, said integral lower flange also being a solid thickened mass and extending inwardly from said lower end, said lower flange having an annular recess located interiorly of said rim and opening upwardly, said annular recess having a cross-sectional configuration that tapers downwardly on opposite sides thereof to an enlarged ball-head shaped opening which has a diameter exceeding the width of the downwardly tapering portion of said annular recess for at least most of the height thereof, said downwardly tapering portion being generally centrally positioned relative to said enlarged ball-shaped opening and having a height greater than the diameter of the ball-shaped opening, said sifting screen having a flat circular configuration with a downwardly extending peripheral edge that is configured and dimensioned to be mounted within and generally centered relative to the downwardly tapering and enlarged ball-head shaped openings of said annular recess, and cement deposited within and generally filling the confines of the downwardly tapering and enlarged ball-head shaped openings of said annular recess to positively lock said generally centered screen to the lower flange of said rim.

4,199,443

OIL MONITORING APPARATUS

Thomas E. Tauber, 24 E. Glenolden Ave., Glenolden, Pa. 19036

Filed May 30, 1978, Ser. No. 910,495

Int. Cl.² B01D *35/14*

U.S. Cl. 210—85 **5 Claims**

1. In a fluid lubrication system for mechanical drives, a particle separator for separating failure particles from wear particles which comprises:

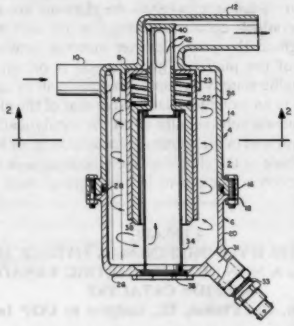
means for cyclonicly separating heavier failure particles from lighter wear particles contained in the fluid which includes

a closed cylindrical housing forming a chamber having a smooth inner wall, a top and a bottom,

a fluid inlet adapted to tangentially inject the fluid into said housing,

a fluid outlet from said housing, and

a hollow open bottomed cylindrical sleeve concentric with and depending from the top of said housing and spaced apart from the bottom of said housing, said sleeve adapted to receive the treated fluid and conduct it to said outlet and further adapted to cooperate with said inlet such that when the fluid is tangentially injected into an annulus formed between the inner wall of said housing and the outer wall of said sleeve a downwardly spiraling cyclonic flow pattern is developed, said flow pattern generating a centrifugal force field which selectively propels failure particles out of the flow pattern for subsequent capture;



means adapted to receive the separated failure particles;

indication means connected to said receiving means for indicating the presence of failure particles, and

a cylindrical filter means adapted to remove the wear particles from the fluid stream being treated, said filter having its upper end connected to the lower end of said sleeve and its lower end abutting the bottom of said chamber of said housing.

4,199,444

PROCESS FOR DECOLORIZING PULP AND PAPER MILL WASTEWATER

James E. Blair, Roanoke, and Lois T. Davis, Salem, both of Va., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,215

Int. Cl.² C02C *1/06*; C12B *1/00*

U.S. Cl. 210—11 **4 Claims**

1. A process of decolorizing pulp and paper mill wastewater comprising treating wastewater effluent from a pulp or paper mill with *Pseudomonas aeruginosa* 4-5-14, ATCC-31482, under aerobic conditions.

4,199,445

PROCESS FOR SEPARATING AQUEOUS MINERAL ACID MIXTURES

Robert Chiang, Ballwin, and Eli Perry, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 191,097, Oct. 20, 1971, Pat. No. 3,950,247, and a continuation of Ser. No. 46,801, Jun. 16, 1970, abandoned. This application Jan. 5, 1976, Ser. No. 646,460

Int. Cl.² B01D *13/00*

U.S. Cl. 210—23 R **13 Claims**

1. Process for the separation of water from liquid feed mixtures comprising water together with mineral acids which comprises contacting the aforesaid mixture against one side of

an ionic organic membrane, composed of organic polymers having active anionic groups derived from acids, and withdrawing, at the second side, a vaporized mixture having a higher concentration of water than the aforesaid feed mixture, with the mixture at second side being maintained at a lower chemical potential than the feed side.

4,199,446

OIL/WATER SEPARATION PROCESS AND APPARATUS

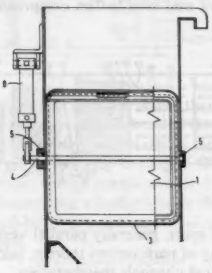
George F. G. Clough, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 31, 1978, Ser. No. 929,781

Claims priority, application United Kingdom, Aug. 15, 1977, 34157/77

Int. Cl.[2] B01D *17/04, 29/02*

U.S. Cl. 210—23 R 12 Claims



1. A process for the removal of oil from an oil in water emulsion which comprises carrying out, in sequence, the following operations: (1) passing the oil in water emulsion into and through a vessel containing a rectangular shaped oil coalescer which is immersed in the emulsion so that the emulsion flows through the coalescer from a first fact to a second face, (2) removing coalesced oil droplets formed downstream of the coalescer, (3) temporarily reversing the direction which the emulsion flows through the coalescer, (4) changing the position of the coalescer within the vessel so that, when subsequently the emulsion re-enters the vessel, the emulsion flows through the coalescer from its second face to its first face, (5) causing the emulsion to re-enter, fill and pass through the vessel, (6) removing the coalesced oil droplets formed downstream of the coalescer, (7) temporarily reversing the direction which the emulsion flows through the coalescer, (8) changing the position of the coalescer within the vessel so that, when subsequently the emulsion re-enters the vessel, the emulsion flows through the coalescer from its first face to its second face, (9) causing the emulsion to re-enter, fill and pass through the vessel, and (10) repeating, in sequence, the operations.

4,199,447

COALESCENCE OF OIL IN OIL/WATER EMULSIONS

David B. Chambers, Cheadle Hulme, and Barry Walker, Harrogate, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 557,933, Mar. 13, 1975, abandoned.

This application Nov. 29, 1976, Ser. No. 745,813

Int. Cl.[2] B01D *13/00*

U.S. Cl. 210—23 R 5 Claims

1. A method for the removal of oil from an oil in water emulsion by passing the emulsion through a fibrous structure and removing the coalesced oil droplets so formed the improvement comprising a fibrous structure comprising fibres having finely divided particles having an average size of one micron or less and which exhibit oleophilic and hydrophobic properties adhered to and penetrating their outer surfaces.

4,199,448

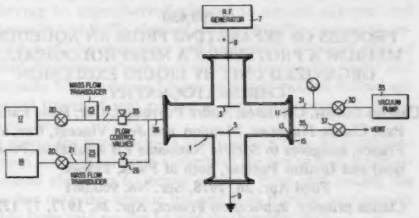
REVERSE OSMOSIS MEMBRANE OF HIGH UREA REJECTION PROPERTIES

Catherine C. Johnson, Los Altos Hills, and Theodore J. Wydeven, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 9, 1976, Ser. No. 694,407

Int. Cl.[2] B01D *13/04, 13/00*

U.S. Cl. 210—23 H 17 Claims



1. A method for preparing polymeric membranes of high urea and salt rejection characteristics, which comprises:

generating a plasma of ethylene and nitrogen in an RF field having a power within the range of about 15 to about 35 watts;

forming a polymeric membrane by depositing a polymer of ethylene from said plasma onto a substrate, such that nitrogen from the nitrogen gas is incorporated within the polymer in a chemically combined form.

11. A process for purifying aqueous wastes containing salt and urea, which comprises:

subjecting said aqueous waste to reverse osmosis over a membrane prepared by the process of claim 1.

4,199,449

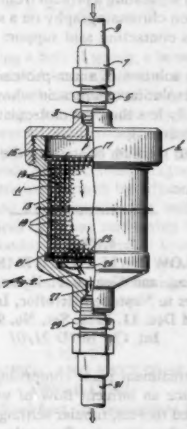
REMOVAL OF BACTERIA

Frank L. Slejko, Voorhees, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 23, 1977, Ser. No. 854,306

Int. Cl.[2] B01D *15/04*

U.S. Cl. 210—29 13 Claims



7. A process for the removal of bacteria from a liquid medium comprising (1) passing a bacteria-containing liquid me-

dium first through a bed of a macroreticular anion ion exchange resin having a pore diameter of from about 8000 A to about 500,000 A and capable of removing bacteria from said liquid medium and subsequently through an ion exchange resin free filter having a submicron pore size of from about 0.03 to about 1 micron while maintaining a pressure tight relationship between said filter and said resin (2) continuing the flow of liquid medium until the capacity of said resin is exhausted whereupon the submicron filter becomes clogged with bacteria passing through the resin bed causing the flow of liquid exiting from said filter to be substantially reduced.

4,199,450

PROCESS OF SEPARATING FROM AN AQUEOUS MEDIUM A PROTEIN OR A MORPHOLOGICALLY ORGANIZED UNIT BY LIQUID EXCLUSION CHROMATOGRAPHY

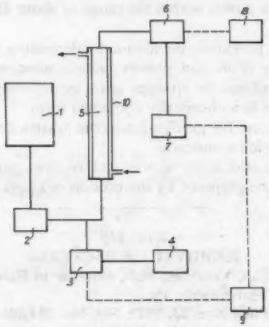
Charles Dulout, Carrieres; André Peyrouset, Ger; René Panaris, Pau; Claude Hannoun, Meudon, and Jean Vincent, Pau, all of France, assignors to Societe Nationale Elf Aquitaine (Production) and Institut Pasteur, both of Paris, France

Filed Apr. 26, 1978, Ser. No. 900,081

Claims priority, application France, Apr. 26, 1977, 77 12518; Apr. 12, 1978, 78 10769

Int. Cl.[2] B01D *15/08*

U.S. Cl. 210—31 C **18 Claims**



1. A process of separating a protein from an aqueous medium by liquid exclusion chromatography on a solid porous support which comprises contacting said support with the following successive agents:

(a) an aqueous solution of a non-proteinic polymer;

(b) an aqueous solution of a protein whose molecular weight is substantially less than the molecular weight of the protein to be separated;

(c) said aqueous medium containing the protein to be separated; and

(d) an eluent.

4,199,451

SPLIT FLOW WATER TREATMENT PLANT

Andrew K. Hsiung, and George F. Eaton, both of Corvallis, Oreg., assignors to Neptune Microfloc, Inc., Corvallis, Oreg.

Filed Dec. 11, 1978, Ser. No. 968,088

Int. Cl.[2] B01D *21/01*

U.S. Cl. 210—86 **3 Claims**

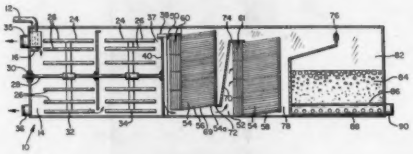
1. In a water treatment plant comprising a container, inlet means to introduce an influent flow of water into said container to be treated therein, tubular settling means in said container for settling the water at a flow velocity sufficiently low to provide substantially laminar flow through said tubular settling means, filtration means in said container and downstream of said tubular settling means for filtering the water received from said tubular settling means, and discharge means for discharging water received from said filtration means,

a settling basin containing said tubular settling means, said settling basin comprising:

a pair of longitudinally horizontally spaced plenums;

a pair of banks of generally horizontally extending settling tubes disposed in said settling basin between said plenums, one of said banks being downstream of the other, said tubes having a total cross-sectional area such that for a predetermined maximum flow rate through the plant, the flow velocity through each tube will be such as to maintain substantially laminar flow therein, whereby settleable material in the water entering said tubes may settle out of said water and deposit upon the bottoms of said tubes as it passes therethrough from one of said pair of plenums to the other thereof;

an inlet baffle positioned upstream of and adjacent to each of said banks of generally horizontally extending settling tubes, each of said inlet baffles comprising



a set of spaced apart, generally parallel vertical sheets having a plurality of perforations therein, said sheets forming a set of vertical channels therebetween,

the flow of water impinging on a first one of said vertical sheets and thereafter flowing, in a direction perpendicular to said first sheet, through said perforations therein and passing into the first one of said set of vertical channels and thence through the perforations in the others of said sheets sequentially to the last one thereof, said flow then entering the adjacent bank of generally horizontally extending settling tubes, the kinetic energy in said water dissipating rapidly as said flow passes through said baffles,

said inlet baffles providing uniform flow distribution across the mouths of said settling tubes in said banks to facilitate uniform flow therethrough; and

an inclined diverting plate extending from the downstream end of the lowermost tube in the first of said banks to the upper upstream end of the inlet baffle adjacent the second of said banks, said plate dividing the influent flow of water between said banks.

4,199,452

JET AERATION CHANNEL SYSTEM

Mikkel G. Mandt, Cedar Falls, Iowa, assignor to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

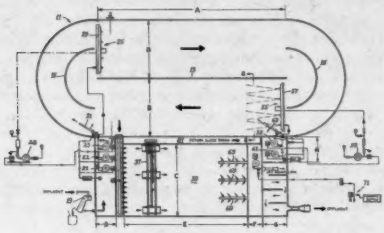
Filed Oct. 3, 1977, Ser. No. 839,011

Int. Cl.[2] C02C *1/10*

U.S. Cl. 210—104 **9 Claims**

1. An aerobic system for treating aqueous waste liquid comprising an oxidation ditch for confining and retaining the waste liquid and defining a continuous closed flow path through which the confined liquid is moved, a raw waste sump for receiving influent raw waste to be treated in said oxidation ditch, a first raw waste pump activated by an intermediate level of raw waste received in said raw waste sump, a second raw waste pump activated by a high level of raw waste in said raw waste sump which is higher than said intermediate raw waste sump level, a first blower activated during operation of either said first or said second raw waste pumps, a plurality of gas-liquid contactors for receiving raw waste from either or both of said raw waste pumps and air from said first blower and for discharging a high velocity raw waste liquid-air jet or mixed liquor into said oxidation ditch below the surface of said

confined liquid in said oxidation ditch, a clarifier in liquid communication with said oxidation ditch for receiving mixed liquor from said oxidation ditch and for receiving sludge from said mixed liquor, a sludge sump for receiving sludge recovered from said clarifier, a first sludge pump activated by an intermediate level of sludge received in said sludge sump, a second sludge pump activated by a high level of sludge re-



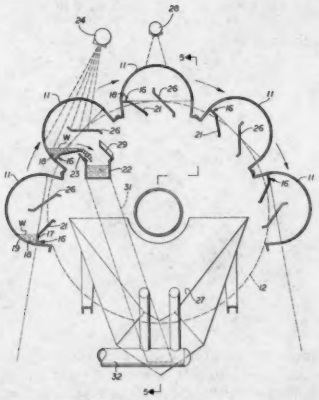
ceived in said sludge sump which is higher than said intermediate sludge sump level, a second blower activated during operation of either said first or said second sludge pump and a plurality of gas-liquid contactors for receiving said sludge from either or both of said sludge pumps and air from said second blower and for discharging a high velocity sludge-air jet into said oxidation ditch below the surface of said confined liquid in said oxidation ditch.

4,199,453

APPARATUS FOR PROTECTING AQUATIC LIFE PASSING THROUGH A WATER FILTER

Robert McCawley, and Kenneth R. Siddle, both of Birmingham, Ala., assignors to Passavant Corporation, Birmingham, Ala.

Filed Sep. 18, 1978, Ser. No. 942,959
Int. Cl.[2] B01D *33/02, 33/38*
U.S. Cl. 210—160 **9 Claims**



1. In apparatus for protecting aquatic life carried by water through a screening unit embodying an endless vertical traveling band screen formed of a plurality of screening baskets which open inwardly and generally horizontally during their upward travel and pass around upper and lower terminal members with the water flowing through each screening basket from the inner side toward the outer side thereof,

(a) a baffle element carried by and extending the length of each screening basket adjacent the trailing side thereof as viewed in the direction of travel and extending inwardly within said basket with at least a portion thereof adjacent said basket being imperforate,

(b) an imperforate area along the length of each said basket at the inner side of said baffle element defining with said imperforate portion of each said baffle element an elongated pocket in position to receive water and aquatic life carried thereby upon said upward travel of said basket through said water and adapted to discharge said water and aquatic life carried thereby during said upward travel of said pocket to a predetermined elevation with said basket passing around said upper terminal member,

(c) a discharge trough inwardly of said traveling band screen having an edge thereof adapted to extend adjacent and beneath said baffle element with said baffle element terminating at a location over and beyond the adjacent edge of said discharge trough in position to receive the water and aquatic life discharged from each said pocket during upward travel of said pocket at said predetermined elevation, and

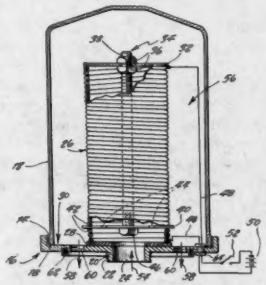
(d) means for introducing a low pressure flow of water into each said pocket upon movement thereof to said predetermined elevation to gently remove from said pocket the water carrying aquatic life and thus transfer said aquatic life from said pocket to said discharge trough.

4,199,454

FILTER

Michael A. Sartore, 3309 Riviera Dr., Sarasota, Fla. 33582

Filed Apr. 10, 1978, Ser. No. 895,142
Int. Cl.[2] B01D *35/06*
U.S. Cl. 210—222 **8 Claims**



1. A filter comprising a helical spring, a housing, said spring being disposed within said housing, means to communicate a fluid to be filtered to a first compartment including the interior portions of said spring, means to communicate outwardly filtered fluid from a second compartment including the interior portions of said housing and the exterior portions of said spring, means to provide a bi-directional magnetic field operating between the interstices formed by adjacent turns of said spring and within said first compartment, said means to provide said magnetic field including said spring being fabricated from an electrical conducting material, a source of electrical current being coupled to the ends of said spring, said adjacent turns of said spring being covered with an insulating non-magnetizable coating.

4,199,455

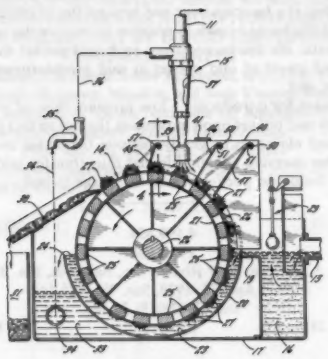
COMBINED MAGNETIC AND CYCLONIC SEPARATING APPARATUS

Mark R. Estabrook, Rockford, Ill., assignor to Barnes Drill Co., Rockford, Ill.

Filed Mar. 25, 1976, Ser. No. 670,458
Int. Cl.[2] B01D *35/06*
U.S. Cl. 210—223 **8 Claims**

1. Apparatus for cleaning dirty liquid containing magnetic

and non-magnetic particles, said apparatus comprising a trough, a rotary drum disposed in said trough and having at least two axially spaced rows of angularly spaced magnets, said drum cooperating with said trough to define a flow path for liquid to pass beneath said drum and through the magnetic field around the drum for collection of the magnetic particles on the drum, said drum and said trough coacting to form an entry end for said path on one side of said drum and a discharge end on the other side, said drum being rotatable in a direction to raise collected particles out of said liquid at said entry end, a cyclone separator for receiving liquid and particles passing from said discharge end and having a spout for discharging a downward



stream of liquid and particles, said spout being located above said drum to discharge said stream onto the collected particles on the upper side of said drum for return of said stream around said drum toward said entry end, the improvement in said apparatus comprising, a pair of plates mounted above said drum and spaced from one another along the axis of the drum, said plates being located on opposite sides of said spout and defining a channel having a width substantially equal to the width of one of said rows of magnets, said channel receiving the downward stream from said spout and being substantially centered with respect to said one row of magnets so as to confine said downward stream to said one row as said stream passes onto said drum and around toward said entry end.

4,199,456

APPARATUS FOR A SCREEN ASSEMBLY FOR REMOVING SOLIDS FROM FLUIDS

William D. Cheesman, Houston, Tex., assignor to Royce Equipment Company, Houston, Tex.

Continuation of Ser. No. 809,756, Jun. 24, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 20,971

Int. Cl.[2] B01D *25/04*

U.S. Cl. 210—232 **4 Claims**

1. A filter screen apparatus, including:

frame means having a first attachment member and a second attachment member arranged in substantially parallel relationship and spaced apart a preselected distance;

said frame means having cross-beam means connected with said attachment members for holding said attachment members spaced apart the preselected distance;

screen means for forming openings of predetermined size through which fluid may flow and which blocks passage of solids larger than a predetermined size;

said screen means having a plurality of tension members disposed in parallel relationship and each having a support surface lying in a common plane with the support surface of the other tension members for tensioning said screen means in a desired manner, each of said plurality of tensioning members connected at one end of said first attachment member and at the other end to said second attachment member;

each of said plurality of tension members having means for tensioning said tension member to a desired level of structural strength without deforming said screen openings from their predetermined size by strain resulting from the tensioning; and

said screen means having a plurality of screen members disposed in parallel relationship and spaced apart a predetermine distance, said plurality of screen members disposed at substantially a right angle to said tensioning members on said support surfaces for forming a substantially planar filter screen panel for positioning the openings of predetermined size from said tension members, said screen members secured solely to said tension members and free of attachment to said frame means, and each of said screen members having substantially zero tension therein to minimize deforming of the flow openings of predetermined size between said screen members when said plurality of tensioning members are tensioned to the desired level.

4,199,457

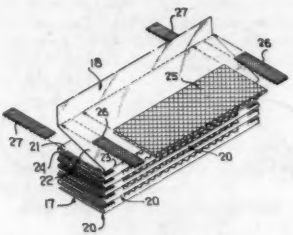
PLEATED ARTIFICIAL KIDNEY

William G. Esmond, 800 Country Club Rd., Havre de Grace, Md. 21078

Filed Nov. 5, 1975, Ser. No. 628,901

Int. Cl.[2] B01D *31/00*

U.S. Cl. 210—321 B **7 Claims**



1. A transfer device comprising plural sets of pairs of films having remote ends, a first spacer (25) extending between adjacent films of adjacent sets of film for a major portion of the lengths of said films, said films being the form of a continuous film arranged in pleated relation, a pair of second spacers (26) between adjacent films of adjacent sets of films at the opposite ends thereof, second spacers of each pair of second spacers being spaced longitudinally from a respective first spacer to facilitate deformation of said films and define inlet and discharge passages in communication with spaces between adjacent films of adjacent sets of films, third spacers (27) between films of each set of films further defining said inlet and discharge pasages, said second spacers and third spacers being generally of a like configuration and aligned with one another and the combined thickness of a second spacer and a third

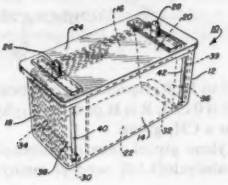
spacer being substantially equal to the thickness of an adjacent first spacer, said first spacers being perforated and multi-planar for the longitudinal flow of a fluid therethrough, said second and third spacers being closed to longitudinal fluid flow therethrough, and first manifold means for directing a first fluid at a pressure into said inlet passages and between films of each film set and out said discharge passages, and second manifold means for directing a second fluid at a lesser pressure than said first pressure into one end of each first spacer and through each first spacer and out of the other end thereof.

4,199,458

MEMBRANE DIFFUSION DEVICE WITH EXTERNAL COMPRESSION

Mark R. Nauman, McHenry, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 28, 1978, Ser. No. 937,664
Int. Cl.[2] B01D *31/00*
U.S. Cl. 210—321 B **8 Claims**



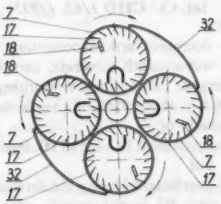
1. In a membrane diffusion device which comprises a stack of flat membrane wall pairs and flat membrane supports in alternating, interleaving relation, said stack being disposed in a casing comprising a pair of opposed sidewalls that are substantially parallel to the flat sides of said stack, and a pair of opposed end walls which are substantially perpendicular to said sidewalls, a bottom contiguous with said sidewalls and end walls and a lid closing the top of the casing, the improvement comprising: means for compressing the end portions of the flat sides of said stack, said compression means comprising a pair of of substantially vertical crimping grooves formed on each sidewall with each of said crimping grooves being adjacent an end wall but spaced a small distance therefrom, said crimping grooves each comprising a portion of the respective sidewall extending inwardly toward the respective end portion of a flat side of said stack.

4,199,459

CONTINUOUS FILTERING-SETTLING CENTRIFUGE

Mikolaj Filipowicz, and Piotr Filipowicz, both of Warsaw, Poland, assignors to Biuro Projektow Przemyslu Cukrowniczego "Cukroprojekt", Warsaw, Poland

Filed Dec. 18, 1978, Ser. No. 970,672
Claims priority, application Poland, Jan. 20, 1978, 204248
Int. Cl.[2] B01D *21/26, 33/10*
U.S. Cl. 210—325 **9 Claims**



1. A continuous centrifuge comprising a rotatable housing, a main shaft for driving the housing, several filtering-settling baskets rotatable at an angular velocity different from that of the centrifuge, said baskets being mounted in bearings in a lower disc and in an upper disc, and driven from the main shaft by means of a motor-driven planetary gear, parts of said baskets being rotatable in a direction opposite to the direction of rotation of the other part of said baskets each of said baskets having planar finned partitions fixed to and extending inwardly a distance less than one half the diameter thereof, from the inner circumference there of, and deflected forwardly to the direction of rotation, and mounted at an angle of from 0° to 40°, in relation to the transverse axes of said baskets, and at an angle of from 0° to 40° in relation to the vertical axes of said baskets, and arcuate guard members connected between a pair of adjacent lower discs and adjacent upper discs.

4,199,460

FATTY ACID-DERIVED LUBRICANTS AND ADDITIVES

Gene Sumrell; Robert R. Mod, both of New Orleans; Frank C. Magne, Metairie, all of La., and Ronald E. Koos, Lansdale, Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 26, 1978, Ser. No. 945,977
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—46.7 **22 Claims**

1. An extreme pressure lubricant composition comprising a major portion of a paraffin or diester base oil containing in an amount to supply extreme pressure properties the additive 3-(0,0-diethylphosphorodithio)propyl 11-0,0-diethylphosphorodithioundecanoate.

5. An extreme pressure lubricant composition comprising a major portion of a paraffin or diester base oil containing in an amount to supply extreme pressure properties the additive 0,0-dibutylphosphorodithioic acid tetrathioester addition product with N-tris(oleoyloxymethyl)methyloleamide.

4,199,461

REFRIGERATION OIL CONTAINING WEAR-INHIBITING AMOUNTS OF AN ARYL PHOSPHATE-FATTY ACID COMBINATION

Sven A. Olund, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 822,109, Aug. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 768,305, Feb. 14, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,554
Int. Cl.[2] C09K *5/04*; C10M *3/40, 1/46*
U.S. Cl. 252—49.8 **9 Claims**

1. In a refrigeration or heat pump apparatus containing a working fluid consisting essentially of a refrigerant and a chemically inert, wax-free refrigeration oil, said refrigerant being a halo-substituted hydrocarbon having from 1 to 3 carbon atoms and said refrigeration oil being alkylbenzene lubricating oil, the improvement which comprises incorporating into said oil the combination of higher fatty acid and hydrocarbyl phosphate ester of from about 10 to 25 carbon atoms having at least one aryl group in synergistic minor amounts sufficient to improve the wear-inhibiting properties of said refrigeration oil and to improve the resistance of said refrigeration oil to decomposition.

4,199,462

COMPOSITIONS BASED ON ALKENYL SUCCINIMIDES, A METHOD OF PREPARING THEM, AND LUBRICANT COMPOSITIONS CONTAINING THEM

Gerard Souls, Meyzieu, and Jean-Paul Lefévre, Le Havre, both of France, assignors to Orogil, Courbevoie, France

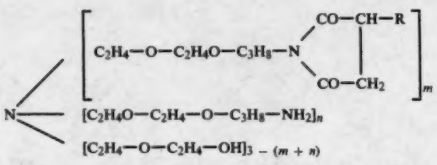
Filed Nov. 9, 1978, Ser. No. 958,960

Claims priority, application France, Nov. 21, 1977, 77 34847

Int. Cl.[2] C10M *1/20*; C10 *1/32*; C07D *207/12*

U.S. Cl. 252—51.5 A **9 Claims**

1. A lubricant additive composition based on alkenyl succinimides comprising at least one alkenyl succinimide of the formula:



in which

R represents an alkenyl group containing from about 20 to 200 carbon atoms;

m is a whole number from 1 to 3;

n is zero or a whole number up to 2, with m+n being from 1 to 3.

4,199,463

ALKYLENE GLYCOL ESTERS OF CARBOXYLATE HALF ESTERS OF 1-AZA-3,7-DIOXABICYCLO[3.3.0] OCT-5-YL METHYL ALCOHOLS, THEIR PREPARATION AND USE AS ADDITIVES FOR GASOLINE AND MIDDLE DISTILLATE FUELS AND LUBRICANTS

Jack Ryer, East Brunswick; Stanley Brois, Westfield, and Esther D. Winans, Colonia, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 952,475, Oct. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 752,872, Dec. 20, 1976, abandoned, which is a division of Ser. No. 573,545, May 1, 1975, Pat. No. 4,017,406. This application Jan. 22, 1979, Ser. No. 5,311

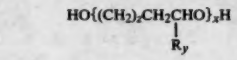
Int. Cl.[2] C10M *1/32*; C10L *1/22*

U.S. Cl. 252—51.5 A **10 Claims**

1. A composition comprising a major amount of liquid hydrocarbon lubricants and at least a friction-reducing amount of an alkylene glycol ester of an ester which is the reaction product of: (a) about 1 molar proportion of a hydrocarbyl substituted C_4 to C_{10} dicarboxylic acid, anhydride or ester having about 6 to about 150 carbon atoms per hydrocarbyl group partly esterified with the reaction product of (b) either about 1 or 2 molar proportions of an aldehyde, or one molar proportion of ketone and one molar proportion of aldehyde, reacted with about 1 molar proportion of tris-(hydroxymethyl) aminomethane; said half ester reaction product having a 1-aza-3,7-dioxabicyclo[3.3.0]octyl ring.

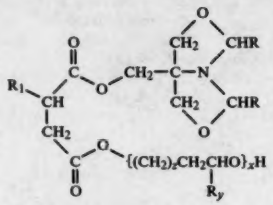
4. A lubricating composition comprising a major amount of liquid lubricatng oil and in the range of about 0.1 to 20 wt.% of an alkylene glycol ester of a half ester which is the reaction product of: (a) about 1 molar proportion of a hydrocarbyl substituted C_4 to C_{10} dicarboxylic acid, anhydride or ester having about 6 to about 150 carbon atoms per hydrocarbyl group partly esterified with the reaction product of (b) either about 1 or 2 molar proportions of an aldehyde, or one molar proportion of ketone and one molar proportion of aldehyde, reacted with about 1 molar proportion of tris-(hydroxymethyl) aminomethane; said reaction product having a 1-aza-3,7-dioxabicyclo[3.3.0] octyl ring.

5. A composition according to claim 4 wherein said alkylene glycol ester is the reaction product of one to ten moles of an ethoxylating agent to one mole of said half ester reaction product, said ethoxylating agent being of the class consisting of a C_2 to C_3 alkylene oxide and a glycol of the formula



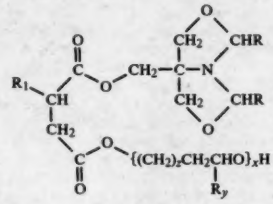
wherein x is 1 to 10, R_y is hydrogen or methyl and z is 0 or 1.

6. A composition according to claim 5 wherein said alkylene glycol ester is of the formula



wherein X is 1 to 10, R_1 represents a hydrocarbyl group of 6 to 150 carbons, z is 0 or 1, R is H or C_1 to C_{12} hydrocarbyl group and R_y is H or a CH_3 group.

10. An alkylene glycol ester of carboxylic half esters of 1-aza-3,7-dioxabicyclo[3.3.0] oct-5-yl methyl alcohol having the formula



wherein X is 1 to 10, R_1 represents a hydrocarbyl group of 6 to 150 carbons, Z is 0 or 1, R is H or C_1 to C_{12} hydrocarbyl group and R_y is H or a CH_3 group.

4,199,464

LAUNDRY DETERGENT SUBSTRATE ARTICLES

Cushman M. Cambre, Blue Ash, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 23, 1977, Ser. No. 864,050

Int. Cl.[2] C11D *1/62, 1/835*

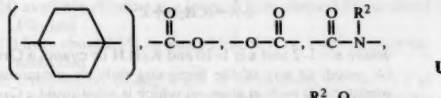
U.S. Cl. 252—91 **34 Claims**

1. A laundry detergent article consisting essentially of a water-insoluble, wet-strength substrate, carrying an effective amount of a detergent composition comprising:

(a) from about 5 to about 95% of a surfactant mixture consisting essentially of;

(i) a nonionic surfactant having an HLB of from about 5 to about 17; and

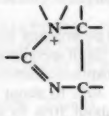
(ii) a cationic surfactant having the formula $R^1{}_mR^2{}_xY_LZ$, wherein each R^1 is an organic group containing a straight or branched alkyl or alkenyl group optionally substituted with up to 3 phenyl groups and, optionally, interrupted by up to 4 structures each of which is selected from the group consisting of



and mixtures thereof, and which contain from about 8 to about 22 carbon atoms, and which may additionally contain up to 20 ethoxy groups, m is a number of from 1 to 7 and no more than one R^1 can have more than 12 carbon atoms when m is 3 or greater, each R^2 is an alkyl or hydroxyl alkyl group containing from 1 to 4 carbon atoms or a benzyl group with no more than one R^2 in a molecule being benzyl, x is a number from 0 to 7, the remainder of any carbon, nitrogen sulfur or phosphorus atom positions being filled by hydrogens, Y is selected from the group consisting of:

(1)

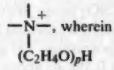
(2)



(3)

(4)

(5)



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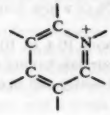

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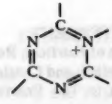


mixtures thereof, (8)

L is a number from 1 to 3, Z is an anion in a number sufficient to give electrical neutrality, said cationic surfactant being at least water-dispersible in admixture with said nonionic surfactant;

the ratio of said nonionic surfactant to said cationic surfactant being in the range of from about 5:3 to about 300:1; and

(b) from about 1% to about 30% of a nonionic or cationic solubilization aid which has a solubility in 100° F. water of at least about 20% by weight, and which completely dissolves in 100° F. water in no more than about 2 minutes.

4,199,465

LAUNDRY DETERGENT SUBSTRATE ARTICLES

Victor F. Rodriguez, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

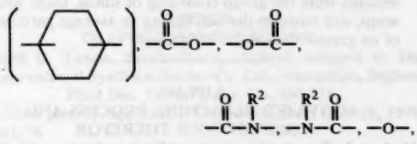
Filed Dec. 23, 1977, Ser. No. 864,136
Int. Cl.[2] C11D *1/62, 1/835*
U.S. Cl. 252—91 **37 Claims**

1. A laundry detergent article consisting essentially of a water-insoluble, wet-strength substrate, carrying an effective amount of a detergent composition comprising:

(a) from about 5 to about 95% of a surfactant mixture consisting essentially of;

(i) a nonionic surfactant having an HLB of from about 5 to about 17; and

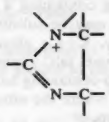
(ii) a cationic surfactant having the formula $R_m^1R_x^2Y_LZ$, wherein each R^1 is an organic group containing a straight or branched alkyl or alkenyl group optionally substituted with up to 3 phenyl groups and, optionally, interrupted by up to 4 structures each of which is selected from the group consisting of



and mixtures thereof, and which contain from about 8 to about 22 carbon atoms, and which may additionally contain up to 20 ethoxy groups, m is a number of from 1 to 7 and no more than one R^1 can have more than 12 carbon atoms when m is 3 or greater, each R^2 is an alkyl or hydroxy alkyl group containing from 1 to 4 carbon atoms or a benzyl group with no more than one R^2 in a molecule being benzyl, x is a number from 0 to 7, the remainder of any carbon, nitrogen, sulfur or phosphorus atoms positions being filled by hydrogens, Y is selected from the group consisting of:

(1)

(2)



(3)

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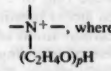

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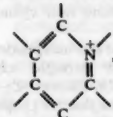

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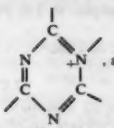


, and

mixtures thereof, (8)

L is a number from 1 to 3, Z is an anion in a number sufficient to give electrical neutrality, said cationic surfactant being at least water-dispersible in admixture with said nonionic surfactant; the ratio of said nonionic surfactant to said cationic surfactant being in the range of from about 5:3 to about 300:1; and

(b) from about 1% to about 30% of a nonionic or cationic solubilization aid which has a solubility in 100° F. water of at least about 20% by weight, and which completely dissolves in 100° F. water in no more than about 2 minutes; and

(c) from about 2 to about 20% of an anti-bleeding material, selected from the group consisting of silicas, clays, amides, soaps, and mixtures thereof, having an average particle size of no greater than about 3.0 microns.

4,199,466

ACTIVATED BLEACHING PROCESS AND COMPOSITIONS THEREFOR

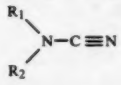
Herbert L. Benson, Jr., Cypress, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 21, 1978, Ser. No. 934,741

Int. Cl.[2] C11D *7/18, 7/32, 7/54*

U.S. Cl. 252—95 **28 Claims**

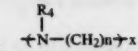
1. A process for activating a peroxide-based bleach which comprises conjointly incorporating into an aqueous medium (a) a peroxide-activating amount of a cyanoamine having an equivalent weight of about 44 to about 600 and represented by the formula:



where R_1 and R_2 taken together with the amino nitrogen to which they are attached form a ring containing 4 to 6 carbon atoms, which carbon atoms may be substituted with a C_1–C_5 alkyl, C_1–C_5 alkoxy, C_1–C_5 alkanoyl, phenyl, middle halogen, amino, amine salt, cyano or cyanoamino group, or with a nitrogen-containing heterocyclic group of 4 to 6 carbon atoms where the nitrogen atom is substituted with a cyano group, or

where R_1 and R_2 taken together with the amino nitrogen to which they are attached are part of a heterocyclic ring of 5 to 7 atoms containing in addition to the indicated nitrogen, one or two additional hetero atoms selected from the group consisting of O, S and N—R_3, where R_3 is hydrogen or a C_1–C_5 alkyl, C_2–C_5 alkenyl, C_2–C_5 alkynyl, phenyl, C_7–C_9 aralkyl, C_5–C_7 cycloalkyl, C_1–C_5 alkanoyl or cyano group, or another heterocyclic ring of 5 to 7 atoms containing one to three nitrogen atoms substituted with a cyano group, and where the carbon atoms of the first heterocyclic ring or substituent heterocyclic ring can be substituted with a C_1–C_5 alkyl, C_1–C_5 alkoxy, C_1–C_5 alkanoyl, middle halogen, amino, amine salt, cyano or cyanoamino group; or

where R_1 and R_2 are the same or different and independently represent hydrogen, C_1–C_{20} alkyl (straight chain, branched chain or cycloalkyl), C_2–C_{20} alkenyl, C_2–C_{20} alkynyl, C_1–C_{20} alkanoyl, C_1–C_{20} ethoxylate or propoxylate, phenyl, C_7–C_{20} aralkyl, alkenylcyanoamino or a polyalkenylamino of the type



where n = 1–2 and x is 1–10 and R_4 is H or cyano, a Group IA metal, or any of the foregoing radicals containing a substitutable carbon atom on which is substituted a C_1–C_5 alkyl, C_1–C_5 alkoxy, C_1–C_5 alkanoyl, middle halogen, amino or an amine salt, cyano, cyanoamino or hydroxyl group, provided that when either of R_1 or R_2 is hydrogen or a Group IA metal, the other of R_1 or R_2 is not hydrogen or a Group IA metal, and further provided that when either R_1 or R_2 is phenyl, the other of R_1 or R_2 is not hydrogen or a Group IA metal, (b) a peroxide-based bleach and (c) a buffering agent to maintain the aqueous medium under alkaline conditions.

4,199,467

ALKALINE DISHWASHER DETERGENT

Gerald W. Novosel, Cincinnati; Lawrence A. Gilbert, Fairfield; Maria L. S. Wee, and Frank J. Mueller, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 4, 1978, Ser. No. 902,577

Int. Cl.[2] C11D *7/56*

U.S. Cl. 252—103 **18 Claims**

1. An automatic dishwashing composition providing optimum cleaning; spotting and filming; and physical characteristics consisting essentially of:

(1) from about 20% to about 60% of a detergency builder selected from the group consisting of alkali metal tripolyphosphates, pyrophosphates, orthophosphates, carbonates and mixtures thereof; (2) from about 30% to about 38% alkali metal silicate providing from about 10% to about 15% of SiO_2 the silicate being a mixture of alkali metal silicates of which (a) from about 6% to about 15%, based on the total formula is present as hydrous silicate having an SiO_2:M_2O ratio of from about 2.0 r to about 3.2 r and a solids content of from about 75% to about 85%, and (b) the remainder of the silicate is a mixture of 2.0 r and 3.0 r to 3.6 r silicates with from about 15% to about 50% of the total silicate being provided by the 2.0 r silicate, and from about 10% to about 50% of the total SiO_2 being provided by the higher ratio silicate, and wherein M is selected from the group consisting of sodium and potassium; (3) available chlorine at a level of from about 0.5% to about 3%; and (4) from about 5.5% to about 9.5% of a low foaming nonionic surfactant

said composition having a pH of from about 10.4 to 10.9 at 2,500 ppm and being substantially free of materials having a pH of 12 or more at a concentration of 1% in water and organic chelating builders.

4,199,468

ALKALINE DISHWASHER DETERGENT

Brian D. Barford; Lawrence A. Gilbert, both of Fairfield; Robert A. Staub, Cincinnati; Royal D. Collins, Bethel, and Charles R. Ries, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 849,206, Nov. 7, 1977, abandoned. This application May 4, 1978, Ser. No. 902,578

Int. Cl.[2] C11D *7/56*

U.S. Cl. 252—103 **12 Claims**

1. An automatic dishwashing composition providing optimum cleaning and spotting and filming characteristics consisting essentially of:

(1) from about 20% to about 50% of a sequestering builder selected from the group consisting of alkali metal, tripolyphosphates and pyrophosphates;

(2) from about 8% to about 20% trisodium phosphate;

(3) from about 5% to about 20% of SiO_2, at least 50% of

which is present as an alkali metal silicate having an SiO_2:-M_2O ratio of about 2.0, and any remainder being present as a higher ratio silicate wherein M is selected from the group consisting of sodium and potassium;

(4) available chlorine at a level of from about 0.5% to about 3%; and

(5) from about 2.5% to about 15% of a low foaming nonionic surfactant

said composition having a pH of from about 10.5 to 11.2 at 2,500 ppm and being substantially free of (1) materials having a pH of 12 or more at a concentration of 1% in water and (2) organic chelating builders.

4,199,469

COMPOSITION AND METHOD FOR CLEANING DRINKING WATER TANKS

Michael Walzer, Landsberg, Fed. Rep. of Germany, assignor to Feldmann Chemie, Fed. Rep. of Germany

Filed Jun. 21, 1978, Ser. No. 917,653

Int. Cl.[2] C11D *7/08*

U.S. Cl. 252—146 **11 Claims**

1. Composition for cleaning large-size storage tanks for drinking-water which comprises an aqueous solution containing about 3 to 6 percent by weight of ascorbic acid, about 13 to 15 percent by weight of hydrochloric acid, about 7 to 10 percent by weight of phosphoric acid, about 2 to 3 percent by weight of formic acid, about 1 to 3 percent by weight of citric acid, and about 10 to 15 percent by weight of 20 percent isopropyl alcohol solution.

4,199,470

MATERIAL FOR RECOVERING URANIUM AND METHOD FOR RECOVERING A URANIUM SOLUTION OF HIGH PURITY AND HIGH CONCENTRATION, USING THE SAME

Shinichi Yasuda, Otsu; Takayasu Niwa, Toyonaka, and Takayuki Kurohara, Osaka, all of Japan, assignors to Kuei Chemical Co., Ltd., Osaka, Japan

Filed May 5, 1978, Ser. No. 903,144

Claims priority, application Japan, May 13, 1977, 52/56071; Aug. 29, 1977, 52/103419; Feb. 2, 1978, 53/11322

Int. Cl.[2] B01D *59/30;* C22B *60/02*

U.S. Cl. 252—184 **21 Claims**

1. A material for recovering uranium from acidic uranium solution, which comprises a mineral acid salt of a weakly basic anion exchange resin having pyridine nuclei at its main chain or side chain, and a cross-linked polymer structure.

16. A method for recovering uranium in the form of an aqueous uranium solution of high purity and high concentration which comprises eluting uranium from a uranium-adsorbed material with an eluting agent, characterized by using a material for recovering uranium from acidic uranium solution comprising a mineral acid salt of a weakly basic anion exchange resin having pyridine nuclei at its main chain or side chain, and a cross-linked polymer structure.

4,199,471

FREEZE-STABLE LIQUID BLOOD CONTROL STANDARD

Allan L. Louderback, 9661 Longden Ave., Temple City, Calif. 91780, and Paul R. Szatkowski, 24 Winthrop Rd., Bethel, Conn. 06801

Filed Nov. 16, 1978, Ser. No. 961,184

Int. Cl.[2] G01N *33/16*

U.S. Cl. 252—408 **17 Claims**

1. A freeze-stable blood control standard for the quality control of the measurement of blood pH and gases comprising a sealed receptacle containing treated erythrocytes and a gaseous head space having a volume which is at least equal to about the volume of said erythrocytes, said erythrocytes being treated by thorough washing in saline solution, mild admixing with a solution of aldehyde and saline, thorough washing in saline solution, then slow admixing with a cryoprotective agent selected from the group consisting of lower aliphatic diols and triols to a concentration of from about 20 to about 40 volume percent of said cryoprotective agent, said gaseous head space comprising from about 0% to about 15% CO_2, from about 0% to about 25% O_2 and the balance selected from the group consisting of N_2 and inert gases and mixtures thereof.

4,199,472

OXYGEN ABSORBENT COMPOSITION

Sadao Ohtsuka, Nagareyama, and Takaaki Yamaguchi, Tokyo, both of Japan, assignors to Mitsubishi Gas Chemical Company Inc., Tokyo, Japan

Filed Jul. 15, 1977, Ser. No. 816,135

Claims priority, application Japan, Jul. 15, 1976, 51/84168

Int. Cl.[2] B01J *31/02, 27/02;* C09K *3/00;* C01B *17/66*

U.S. Cl. 252—427 **20 Claims**

1. An oxygen absorbent composition consisting essentially of (a) an oxygen absorbent comprising sodium dithionite as a main component and (b) at least one fiber material in an amount of from about 1 part to about 50 parts by weight per 100 parts by weight of the oxygen absorbent.

4,199,473

OLEFIN POLYMERIZATION

Donald G. Timms, Brockenhurst, England, assignor to The International Synthetic Rubber Co. Ltd., Hampshire, England

Filed Dec. 13, 1977, Ser. No. 860,734

Claims priority, application United Kingdom, Dec. 29, 1976, 54242/76

Int. Cl.[2] C08F *4/64*

U.S. Cl. 252—429 C **12 Claims**

1. A process for preparing a modified titanium chloride component for a titanium containing Ziegler olefin polymerisation catalyst comprising (1) reacting an organo-magnesium compound of the formula RMg X or R_2Mg where R is a hydrocarbyl group and X is chloride, bromine or iodine with an oxygen-containing compound which introduces a C—O—Mg bond into the organo-magnesium compound or with carbon dioxide or oxygen under anhydrous condition, reacting the product of step (1) with a carboxylic acid chloride and then (2) reacting the product with titanium tetrachloride.

4,199,474

CATALYSTS FOR POLYMERIZING OLEFINS

Stylianos Sandis, Lavera, and Jean C. Bailly, Martigues, both of France, assignors to Naphtachimie Societe Anonyme, Courbevoie, France

Filed Feb. 9, 1978, Ser. No. 876,357

Claims priority, application France, Feb. 23, 1977, 77 05269

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[2] C08F *4/64*

U.S. Cl. 252—429 B **18 Claims**

1. In a process for the production of solid catalyst based on titanium trichloride used in the polymerization of alpha-olefins, wherein titanium tetrachloride is reduced by an organoaluminum compound to form a precipitate and then the precipitate is matured in the presence of its formation media, the improvement comprising reducing the titanium tetrachloride with the organo-aluminum compound such that:

the ratio between the number of mols of titanium tetrachloride and the number of organic gram equivalents of the organo-aluminum compound is from 1.2 to 1.8;

the organo-aluminum compound comprises a compound having the formula AlR_nX_{3-n}, in which R is an alkyl, cycloalkyl, aryl or aralkyl group containing from 1 to 12 carbon atoms, X is a hydrogen atom or a halogen atom, and n is an integer or a fraction capable of being of any value of from 1 to 3;

the process is performed in the presence of from 2 to 5 mols of organo-aluminum compound, of one or more aliphatic

ethers having the formula R'—O—R" in which R' and R" are alkyl group containing from 1 to 5 carbon atoms in which the organo-aluminum compound is admixed with at least a part of the ether prior to admixture with the titanium tetrachloride;

the reduction of the titanium tetrachloride is performed at −10° to 80° C.;

maturing of the precipitate is performed at from 80° to 115° C. for a period of from 15 minutes to 24 hours and recovering the solid catalyst.

4,199,475

CATALYST FOR PRODUCING POLYMERS OF ETHYLENE

M. Bruce Welch, and Darryl R. Fahey, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 22, 1978, Ser. No. 944,941
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 C **11 Claims**

1. A method for preparing a catalytic composite comprising:

(a) reacting an inorganic support containing surface hydroxyl groups with a compound chosen from among (1) compounds of the formula $Ti(OR)_nX_{4-n}$, (2) VX_4, and (3) $VO(OR')_mX_{3-m}$ wherein R is selected from among alkyl, cycloalkyl, aryl, acyl and combinations thereof with each group containing from 1 to about 20 carbon atoms, R' is an alkyl group containing from 1 to about 20 carbon atoms, m is 0 to 3, n is 0 to 4, and X is bromide, chloride, or iodide, to form a first composition; and thereafter

(b) reacting said first composition with a compound of titanium or vanadium as defined above chosen from compounds of the metal not reacted in step (a) to form a second composition; thereafter

(c) reacting said second composition with an organoaluminum compound to form a third composition; and

(d) reacting said third composition with titanium tetrahalide to form the catalyst composite.

4,199,476

OLEFIN POLYMERIZATION CATALYST

John L. Melquist, and Glen R. Hoff, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 23, 1978, Ser. No. 935,891
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—431 R **12 Claims**

1. A method for preparing an alpha-olefin polymerization catalyst component comprising:

(A) reacting components comprising a magnesium (II) alkoxide and a liquid titanium (IV) alkoxyhalide neat to form a neat, liquid reaction product, said magnesium (II) alkoxide and titanium (IV) alkoxyhalide being employed in amounts such that the molar ratio of elemental titanium to elemental magnesium ranges from about 0.1:1 to about 10:1; and

(B) reacting said neat, liquid reaction product with an alkylaluminum halide, said alkylaluminum halide being employed in an amount which is effective to halide the titanium and magnesium contained in said neat, liquid reaction product.

4,199,477

METHOD FOR APPLICATION OF POROUS WASH COATS TO LOW POROSITY REFRACTORY CATALYTIC MONOLITHS AND THE RESULTING SUPPORT

Louis Hegedus, St. Clair Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1975, Ser. No. 562,658
Int. Cl.[2] B01J *29/00, 23/08*
U.S. Cl. 252—450 **8 Claims**

1. In a process for production of a high strength and low porosity cordierite catalytic monolith support having an active alumina coating tightly adherent to and evenly dispersed on the surfaces of the thin walls thereof, the steps of immersing the low porosity support in an aqueous hydrofluoric acid bath containing 1–5% by weight acid at a temperature from ambient to about 100° C., etching the surfaces of said support for a period of time sufficient to produce a roughened surface with the removal of not more than about 3% of the weight of the original support, washing said etched support to remove all traces of acid and its water soluble salts, drying said support, immersing said support in a slurry of active alumina or alumina precursor to be applied to its surfaces, draining and air drying said support, and firing said coating support for a period of up to 2–3 hours in air, the strength of said support being substantially retained and said coating being picked-up in sufficient quantity to minimize the need for repeated dip coating operations.

3. A process as set forth in claim 1 wherein the acid is subjected to an ultrasonic field during the period of support treatment.

4,199,478

METHOD FOR PREPARING METAL-CARBONYL CLUSTERS IMMOBILIZED IN ZEOLITE, AS HETEROGENEOUS CATALYSTS

Elvio Mantovani; Nicola Palladino, and Antonio Zanobi, all of Rome, Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Feb. 1, 1978, Ser. No. 874,196
Claims priority, application Italy, Feb. 1, 1977, 19833 A/77
Int. Cl.[2] B01J *29/06*
U.S. Cl. 252—455 Z **3 Claims**

1. A method for preparing the preparation of metal carbonyl clusters which are trapped in the interior of the crystalline structure of zeolites comprising exchanging a zeolite with a metal in the form of a salt or an ion complex, subsequently reducing and carbonylating the metal itself and recovering a metal carbonyl cluster which is trapped in the interior of the crystalline structure of said zeolite.

2. A method according to claim 1 wherein the metal belongs to the Eighth Group of the Periodic System.

4,199,479

HYDROGENATION CATALYST

John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 24, 1978, Ser. No. 881,084
Int. Cl.[2] B01J *29/00*
U.S. Cl. 252—457 **10 Claims**

1. A catalyst composition having a BET intrinsic surface area above about 60 m^2/g; said composition comprising from about 1 to about 99 percent by weight of a hydrogenating component comprising copper in elemental, hydroxide, carbonate, hydroxy-carbonate or oxide form and zinc oxide and incorporated therewith in initimate admixture from about 1 to about 30 percent by weight of silica substantially to increase the activity of the catalyst composition.

4,199,480

ELECTRICALLY CONDUCTIVE BOAT FOR VACUUM EVAPORATION OF METALS

Edward D. Parent, Hamilton, Mass., and Thomas B. McDonough, San Jose, Calif., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 25, 1978, Ser. No. 909,851
Int. Cl.[2] H01B *1/04*
U.S. Cl. 252—516 **3 Claims**

1. An electrically conductive boat for the vacuum evaporation of metals comprising a refractory composition consisting essentially of a conductor of titanium diboride and/or zirconium diboride, a coconductor of silicon carbide, and an insulator of boron nitride, the weight percent of the conductor is about 35% to 60% and the weight percent of the silicon carbide is about 15% to 35%, the balance being boron nitride.

4,199,481

ACETYLATED ALPHA METHYL STYRENE DIMERS OR DERIVATIVES IN PERFUMES

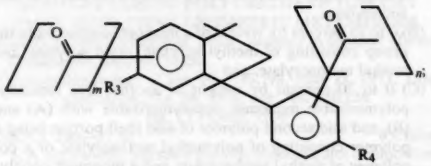
John B. Hall, Rumson; Wilhelmus J. Wiegers, Red Bank; Ira D. Hill, Locust; Robert M. Novak, Fords, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

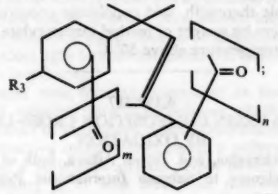
Filed Jun. 7, 1979, Ser. No. 46,551

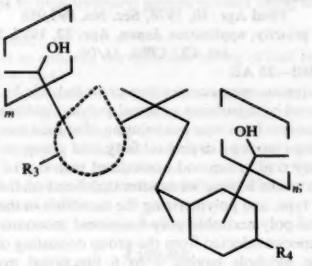
Int. Cl.[2] C11B 9/00; A61K 7/46

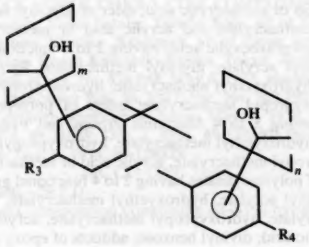
U.S. Cl. 252—522 R **7 Claims**

1. An acylated alpha methyl styrene dimerization product or hydrogenation product thereof having a structure selected from the group consisting of:









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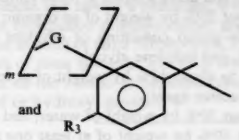
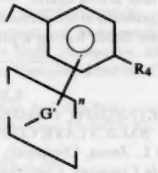
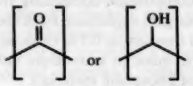


and



wherein G′ and G are each one of the moieties:



with at least one of G or G′ being a moiety having the structure:

wherein R_3 and R_4 are the same or different alkyl or hydrogen; wherein the dashed lines and wavy line represent carbon-carbon single bonds or carbon-carbon double bonds with the proviso that when there is one double bond present in the ring having the dashed lines and the wavy line, only the wavy line is a double bond and when there is more than one double bond present in the ring containing the dashed lines and the wavy line, the ring is a benzene ring; and wherein the line represents either a carbon-carbon single bond or no bond; wherein $m=0$ or 1; and $n=0$ or 1 and $m+n$ are further defined by the inequality:

$$0<m+n\leq 2$$

wherein the line +++ represents a carbon-carbon single bond or a carbon-carbon double bond with the proviso that when the line +++ is a carbon-carbon double bond the line is no bond and when the line +++ is a carbon-carbon single bond, the line is a carbon-carbon single bond.

4,199,482

LAUNDRY PRE-SPOTTER COMPOSITION AND METHOD OF USING SAME

Jean Renaud, Bougival, and Seugnet Monique, Colombes, both of France, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 777,992, Mar. 31, 1977, abandoned. This application Oct. 11, 1978, Ser. No. 950,498

Int. Cl.[2] C11D 1/831, 3/44

U.S. Cl. 252—559 **6 Claims**

1. A laundry pre-spotter composition comprising:

(1) from about 10% to about 40% by weight of a solvent for greasy material selected from the group consisting of benzyl alcohol and B-phenylethylalcohol;

(2) from about 5% to about 35% by weight of a chlorine

substituted aliphatic hydrocarbon solvent having from 1 to 6 carbon atoms and being a liquid at room temperature;
(3) from 5% to about 20% by weight of an organic solvent selected from the group consisting of ethylene glycol, propylene glycol, and butylene glycol;
(4) from about 5% to about 40% by weight of at least one nonionic surface active agent;
(5) from 5% to about 30% by weight of water; and
(6) from 0 to about 10% by weight of at least one anionic surface active agent;
the composition in the forms of a clear, compatible, homogeneous, stable liquid having a pH of 7 to 9.

4,199,483

DETERGENT COMPOSITIONS CONTAINING SALICYLATE CORROSION INHIBITOR

Kenneth L. Jones, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 5, 1979, Ser. No. 17,644
Int. Cl.[2] C11D *3/20*
U.S. Cl. 252—559 **14 Claims**

1. A detergent composition comprising from about 20% to about 75% of a detergent surfactant; from about 1.0% to about 75% of water; and from about 0.1% to about 3.0% of an alkali metal, alkaline earth metal or ammonium salicylate; and being substantially free of phosphate materials.

4,199,484

GELLED WATER EPOXY SAND CONSOLIDATION SYSTEM

Joseph R. Murphey, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 6, 1977, Ser. No. 840,083
Int. Cl.[2] C08L *1/26, 1/28, 1/10*
U.S. Cl. 260—13 **21 Claims**

1. An epoxy resin composition for forming a porous permeable consolidated particulate mass, characterized as a mixture of an epoxy resin composition which comprises a polymerizable polyepoxide, optionally an organic diluent and a curing agent; an aqueous gel with a neutral polysaccharide polymer having a molecular weight of about 100,000–2,000,000 and water solubility sufficient to produce a viscosity of at least about 30 centipoise containing a mixture of surfactants comprising at least one cationic surfactant with limited water solubility and at least one noncationic water miscible surfactant which causes the epoxy resin to coat onto silica surfaces of the particulate material in the presence of the polysaccharide gel and which are present in an amount at least sufficient to coat onto said silica surfaces.

4,199,485

METHOD OF PRODUCING GRAFT COPOLYMERS OF CELLULOSE WITH VINYLPYRIDINES

Zakhar A. Rogovin, Donskaya ulitsa, 24, kv. 68; Boris P. Morin, ulitsa Novatorov, 40, korpus 19, kv. 13, and Marina O. Lishevskaya, ulitsa Novatorov, 40, korpus 11, kv. 46, all of Moscow, U.S.S.R.

Filed Oct. 2, 1978, Ser. No. 947,844
Claims priority, application U.S.S.R., Feb. 14, 1978, 2578783[I]
Int. Cl.[2] C08L *1/02*
U.S. Cl. 260—17.4 GC **6 Claims**

1. In a method of producing graft copolymers of cellulose with vinylpyridine, residing in a free-radical graft copolymerization of cellulose with vinylpyridines from water emulsions in the presence of an emulsifier, the improvement which comprises using as said emulsifier, partially saponified polyvinylacetate, containing 5–15 mass % of acetate groups, and a free radical initiator.

4,199,486

PLASTISOLS COMPRISING COPOLYMERS OF METHYL METHACRYLATE

Hans Boessler, Darmstadt; Peter Quis, Darmstadt-Neu-Kranichstein; Joachim Buechse, Astheim, and Hubert Rauch, Weiterstadt, all of Fed. Rep. of Germany, assignors to Rohm GmbH, Darmstadt, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 905,092
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722752
Int. Cl.[2] C08K *5/12*
U.S. Cl. 260—31.8 M **3 Claims**

1. A plastisol composition comprising emulsion polymerized particles of a polymethyl methacrylate copolymer and an organic plasticizer in a weight ratio between 10:3 and 1:10, said copolymer particles having a particle size from 0.5 micron to 5 microns and having a core portion of a first polymer which is compatible with said plasticizer and a shell portion, surrounding said core portion, of a second polymer different from said first polymer and incompatible with said plasticizer, the weight ratio of core portion to shell portion being between 3:1 and 1:3, said first polymer of said core portion being a polymer consisting of
(A) 15 to 100 percent by weight of a member selected from the group consisting of alkyl acrylates having at least three carbon atoms in the alkyl portion, alkyl methacrylates having at least two carbon atoms in the alkyl portion, and styrene,
(B) 0 to 85 percent by weight of a member selected from the group consisting of methyl acrylate, ethyl acrylate, and methyl methacrylate, and
(C) 0 to 20 percent by weight of another free radically-polymerizable monomer copolymerizable with (A) and (B), and said second polymer of said shell portion being a polymer consisting of polymethyl methacrylate or a copolymer of methyl methacrylate and a monomer copolymerizable therewith, said copolymer comprising at least 80 percent by weight of methyl methacrylate and having a glass temperature above 50° C.

4,199,487

AQUEOUS RESIN COMPOSITION CROSS-LINKABLE BY OXIDATION

Yasuharu Nakayama, and Tetsuo Aihara, both of Hiratsuka, Japan, assignors to Saegusa International Patent Office, Osaka, Japan

Filed Apr. 10, 1978, Ser. No. 895,081
Claims priority, application Japan, Apr. 22, 1977, 52/46523
Int. Cl.[2] C08L *33/06*
U.S. Cl. 260—23 AR **1 Claim**

1. An aqueous resin composition cross-linkable by oxidation and prepared by dissolving a radical-polymerizable poly-functional monomer in an aqueous solution of at least one of water-soluble resins having a drying oil fatty acid group or semi-drying oil fatty acid group and neutralized maleates of synthetic petroleum resins having an unsaturated bond of the vinyl or non-vinyl type, and polymerizing the monomer in the solution, said radical-polymerizable poly-functional monomer being at least one species selected from the group consisting of esters of polyhydric alcohols having 2 to 6 functional groups and acrylic acid or methacrylic acid; ester of glycidyl acrylate or glycidyl methacrylate and acrylic acid or metacrylic acid; esters of polycarboxylic acids having 2 to 4 functional groups and glycidyl acrylate, glycidyl methacrylate, hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl acrylate or hydroxypropyl methacrylate; esters of polyepoxy compounds having 2 to 4 functional groups and hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl acrylate, hydroxypropyl methacrylate, acrylic acid or methacrylic acid; adducts of polyisocyanates having 2 to 4 functional groups and hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl acrylate, hydroxypropyl methacrylate, acrylic acid or methacrylic acid; divinyl benzene; adducts of epoxy polymers

of relatively low molecular weight (up to 2,000 in number average molecular weight) or compounds containing a hydroxyl, epoxy or carboxyl group and acrylic acid, methacrylic acid, glycidyl acrylate, glycidyl methacrylate, hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl acrylate or hydroxypropyl methacrylate; adducts prepared from the hydroxyl-containing monomers mentioned above and methylolated melamine, urea or ethyl silicate by ether exchange reaction.

4,199,488

METAL TREATING

Dennis B. Freeman, North Harrow, and John L. Prosser, Richmond, both of England, assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed May 1, 1978, Ser. No. 901,679

Claims priority, application United Kingdom, May 3, 1977, 18403/77

Int. Cl.² C08L *33/04*

U.S. Cl. 260—29.6 MP **6 Claims**

1. An aqueous acidic composition free of fluoride and hydrogen peroxide comprising a film-forming organic resin, phosphoric acid and a water soluble nitrobenzoic acid or derivative thereof selected from the group consisting of the alkali metal, ammonium and amine salts and esters.

4,199,489

MOISTURE CURING POLYURETHANE TOPCOAT PAINT DISPLAYING GEOMETRIC METAMERISM

William T. Short, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 795,798, May 11, 1977. This application Jun. 28, 1978, Ser. No. 920,136

Int. Cl.² C08K *3/08*

U.S. Cl. 260—37 M **6 Claims**

1. A high-solids, moisture curable topcoat paint composition containing a metal flake pigment and formulated to be sprayed onto a substrate and to flow and cure thereon into a polyurethane film in which the metal flakes are oriented so as to interact with incident light to produce geometric metamerism, said composition comprising

as the binder resin forming component an isocyanate-terminated, moisture curable prepolymer which is the reaction product of an aliphatic diisocyanate and an isocyanate group-reactive mixture comprising a polyoxypropylene diol and a polyoxypropylene polyol having a hydroxyl functionality of at least three, the ratio of isocyanate groups to total hydroxyl groups initially being at least 1.5 to 1,

metal flakes,

a catalyst to enhance the moisture curing of said paint composition, and

a solvent in an amount to reduce the viscosity of the composition for spray application, the nonvolatile content of the composition making up at least 60% of the total,

the combination of said constituents in a curing film produced from said composition cooperating to permit the metal flakes to orient substantially parallel to the surface of the cured film.

4,199,490

BLOCK COPOLYMER LATEX COMPOSITION

Shunji Kamiya; Kunio Satake; Tomiho Sone, all of Yokohama, and Tsutomu Teraoka, Kanagawa, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 574,968, May 6, 1975, abandoned. This application Feb. 16, 1977, Ser. No. 769,102

Claims priority, application Japan, May 7, 1974, 49-50416; Jul. 3, 1974, 49-76028; Dec. 2, 1974, 49-138197; Dec. 2, 1974, 49-138198; Dec. 4, 1974, 49-138529

Int. Cl.² C08L *53/00*

U.S. Cl. 260—29.7 D **7 Claims**

1. A latex composition comprising 63–83% by weight (per solid matter) of (A) an aqueous latex of at least one block copolymer consisting of conjugated diolefin blocks and 10–70% by weight of monovinyl-substituted aromatic compound blocks and having a molecular weight of 5,000–500,000 prepared by solution polymerization, and 37–17% by weight (per solid matter) of (B) a rubber latex, a synthetic resin latex, a mixture of these latices or a latex in which the constitutional elements of the rubber or synthetic resin are modified with carboxyl or hydroxyl groups.

4,199,491

POLYOLEFIN RESIN COMPOSITION

Akio Inayoshi; Hitomi Tomari, both of Sodegaura; Kikuo Nagatoshi, Kisarazu, and Yasuo Hata, Sodegaura, all of Japan, assignors to Idemitsu Kosan Company Limited, Chiyoda, Japan

Filed Dec. 4, 1978, Ser. No. 965,860

Claims priority, application Japan, Dec. 23, 1977, 52/154397; Jan. 30, 1978, 53/8357

Int. Cl.² C08K *5/06*

U.S. Cl. 260—31.2 R **12 Claims**

1. A polyolefin resin composition having excellent plating properties which comprises:

(A) 100 parts by weight of a mixture consisting of from 20 to 80 weight percent of polyolefin resin and from 80 to 20 weight percent of inorganic filler,

(B) from 3 to 60 parts by weight of a compound containing a cyano group, said compound containing a cyano group is at least one member selected from the group consisting of acrylonitrile-styrene resin, acrylonitrile-butadiene-styrene resin, acrylonitrile-methyl-acrylate resin, acrylonitrile-indene resin, acrylonitrile-itaconic acid resin, acrylonitrile-methyl-methacrylate-styrene resin, acrylonitrile-cyclopentadiene resin, terephthalodinitrile and β-naphthonitrile,

(C) from 0 to 20 parts by weight of rubber, said rubber being at least one rubber selected from (1) solid diene rubber selected from the group consisting of isoprene rubber, butadiene rubber, styrene-butadiene rubber, and acrylonitrile-butadiene rubber, (2) liquid rubber having an average molecular weight of from about 500 to about 10,000, which is at least one member selected from the group consisting of 1,2-polybutadiene, 1,4-polybutadiene, styrene-butadiene copolymer, acrylonitrile-butadiene copolymer, polyisoprene, polychloroprene, 1,2-polypentadiene, acrylonitrile-butadiene copolymer, butadiene-isoprene copolymer and butadiene-pentadiene copolymer, and such polymers containing functional groups selected from carboxyl, hydroxy, mercapto, halogen, amino, aziridino, and epoxy, (3) unsaturated dicarboxylic acid half esters, (4) heat-decomposed rubber, and (5) ozone-decomposed rubber,

(D) from 0 to 50 parts by weight of an unsaturated carboxylic acid added polyolefin resin, and

(E) from 0 to 20 parts by weight of at least one surfactant selected from the group consisting of nonionic surfactant and polyethyleneglycol.

4,199,492

AUTOXIDATIVE PAINT COMPOSITION COMPRISING UNSATURATED POLYETHER AND MALEIC MODIFIED ACRYLIC COPOLYMER

Howard T. Roth, Clifton, N.J., assignor to Inmont Corporation, New York, N.Y.

Filed Mar. 29, 1979, Ser. No. 24,822

Int. Cl.² C08L *33/08, 33/10, 33/12, 57/10*

U.S. Cl. 260—32.8 R **7 Claims**

1. A coating composition comprising a blend of

(a) about 60 to about 80% by weight of a maleic modified acrylic copolymer and

(b) about 20 to about 40% by weight of an unsaturated polyether.

4,199,493

REINFORCED POLYARYLENE ESTERS

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 14, 1978, Ser. No. 924,780

Int. Cl.[2] C08K 7/14, 9/04

U.S. Cl. 260—40 R **20 Claims**

1. A molding resin comprising an intimate blend of a polyacrylene ester, a reinforcing agent and a vinyl addition polymer wherein the polyarylene ester consists essentially of units derived from 1,2-bis(4-hydroxyphenyl)ethane and at least one C_8 to C_{25} aromatic dicarboxylic acid, wherein the inherent viscosity of the polyarylene ester at 30° C. determined at a concentration of 0.5 grams polyester per 100 ml solution in a solvent mixture of 60 parts by weight of phenol and 40 parts by weight of sym-tetrachloroethane is at least about 0.5, the melting point is less than about 350° C. and the rate of crystallization is at least about 0.2 minutes^{-1}, and wherein the reinforcing agent is present in an amount effective to reinforce the polyarylene ester and the vinyl addition polymer is present in an amount effective to reduce the melt viscosity of the reinforced polyarylene ester.

4,199,494

METAL COMPLEXES OF α-AMINOPHOSPHONIC ACID HALF-ESTERS AND OF α-AMINOPHOSPHINIC ACIDS

Paul Moser, Riehen, and Jean Rody, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

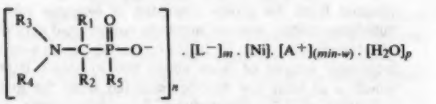
Continuation of Ser. No. 682,871, May 3, 1976, abandoned, which is a continuation-in-part of Ser. No. 503,426, Sep. 5, 1974, abandoned. This application Dec. 21, 1977, Ser. No. 862,698

Claims priority, application Switzerland, Sep. 13, 1973, 13181/73; Jul. 30, 1974, 10473/74

Int. Cl.[2] C07F 15/04; C08K 5/34

U.S. Cl. 260—45.75 N **14 Claims**

1. A compound of the formula



wherein R_1 and R_2 independently of one another represent hydrogen, alkyl, aralkyl, aryl or aryl wherein said or aralkyl which are substituted by chlorine and/or alkyl groups and/or alkoxy groups, or R_1 and R_2, conjointly with the C atom to which they are linked, form a cycloalkane ring, R_3 and R_4 independently of one another denote hydrogen, alkyl, alkoxyalkyl, cycloalkyl, aralkyl or aralkyl substituted by chlorine and/or alkyl groups and/or alkoxy groups, and, if none or only one of the substituents R_1 and R_2 represents an aromatic radical, R_3 and R_4 can also be aryl or an aryl radical substituted by chlorine and/or alkyl groups and/or alkoxy groups, R_5 denotes alkyl, cycloalkyl, aralkyl, aryl, alkoxy, cycloalkoxy, aralkoxy or aryloxy, or wherein the aromatic radical is substituted by chlorine and/or alkyl groups and/or alkoxy groups, L^- denotes the monovalent anion of a carboxylic acid, A^+ denotes the cation of an alkali metal, n denotes an integer from 1 to 4, m denotes an integer from 1 to 3 or zero, w denotes an integer from 2 to 4, and p denotes a value from zero to 2, provided that, when m is zero the value of (m+n−w) is zero.

4,199,495

THIOLCARBONATE ESTER STABILIZERS

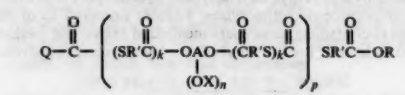
Motonobu Minagawa, Kosigaya; Yutaka Nakahara, Iwatsuki, and Kazumi Kitsukawa, Misato, all of Japan, assignors to Argus Chemical Corp., Brooklyn, N.Y.

Filed Feb. 28, 1978, Ser. No. 882,082

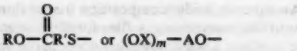
Int. Cl.[2] C07C 154/00, 154/02; C08K 5/38

U.S. Cl. 260—45.85 S **18 Claims**

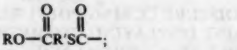
1. As a new composition of matter, thiolcarbonate ester having a molecular weight from 400 to 5000, a thiolcarbonate sulfur content from 3 to 20 percent by weight and having the formula:



in which R is a hydrogen atom, an aliphatic hydrocarbon group having 1 to 22 carbon atoms, a cycloaliphatic hydrocarbon group having 5 to 22 carbon atoms, or an aromatic hydrocarbon group having 6 to 22 carbon atoms; R′ is an alkylene group having 1 to 3 carbon atoms; A is the residue of a polyhydroxy compound having 2 to 40 carbon atoms and 2 to 4 hydroxy groups, provided that the number of hydroxy groups does not exceed the number of carbon atoms; Q is



where X individually at each occurrence is a hydrogen atom or



k has the same value at each occurrence and is zero or 1; m is a whole number from 1 to 3; n is a whole number from 0 to 2; and p is a number from 0 to 10.

15. A stabilizer synthetic resin composition comprising a synthetic resin and 0.01 to 5% by weight of a thiolcarbonate ester according to claim 1.

4,199,496

PROCESS FOR THE RECOVERY OF CHEMICALS FROM THE SHELLS OF CRUSTACEA

Quintin P. Peniston, and Edwin L. Johnson, both of 4900 9th Ave. NW., Seattle, Wash. 98107

Continuation-in-part of Ser. No. 829,154, May 6, 1969, abandoned, and a continuation-in-part of Ser. No. 503,268, Sep. 5, 1974, abandoned. This application Apr. 7, 1975, Ser. No. 565,849

Int. Cl.[2] A23J 1/04

U.S. Cl. 260—112 R **27 Claims**

1. A process for recovering chemicals from waste of crustacea comprising shell of crustacea and which shell comprises bound chitin and bound protein and calcium carbonate, said process comprises:

a. treating the waste of crustacea with an alkaline solution having a molarity of hydroxyl ion in the range of about 0.05 M to, approximately, 0.3 M and at a temperature in the range of about 140° F. to, approximately, 180° F., to remove the bound protein from the shell and to form an alkaline extract comprising said protein and to form a residue of shell comprising chitin and a calcium compound;

b. separating said alkaline extract from said residue of shell;

c. treating said alkaline extract to recover said protein; and,

d. treating said residue of shell to recover said chitin and to recover said calcium.

4,199,497
PROL A FRACTION RECOVERY METHOD AND PRODUCT

Lawrence Burton, Commack, and Frank Friedman, New York, both of N.Y., assignors to Immunology Research Foundation, Inc., Long Island, N.Y.

Continuation-in-part of Ser. No. 600,026, Jul. 29, 1975, Pat. No. 4,082,732. This application Feb. 23, 1978, Ser. No. 880,545
Int. Cl.[2] A23J *1/06*
U.S. Cl. 260—112 B 5 Claims

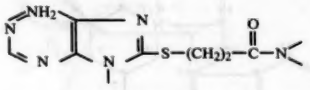
1. A process for the isolation of Prol A comprising: (a) suspending blood serum in a nearly neutral buffered pH solution (b) centrifuging the resultant suspension at 5,400–10,000 g to isolate a first supernatant (c) centrifuging the first supernatant at 5400–10,000 g to give a second supernatant (d) centrifuging the second supernatant at 23,000–48,000 g to give a third supernatant (e) centrifuging the third supernatant at $269–369\times10^3$ g to give a fourth supernatant (f) extracting the fourth supernatant with ether and retaining the aqueous phase (g) heating the aqueous phase to 55° C.–60° C. and centrifuging at $35–42\times10^3$ g to give a fifth supernatant which is clear, substantially colorless liquid (h) centrifuging the fifth supernatant liquid at $1.05–2.69\times10^5$ g yielding a sixth supernatant (i) extracting the sixth supernatant with ether and retaining the aqueous phase (j) heating the aqueous phase to 55° C.–60° C. and centrifuging at $1.05–2.69\times10^5$ g to obtain a seven supernatant (k) centrifuging the seventh supernatant at $264–369\times10^3$ g yielding Prol A as the sediment.

4,199,498
MACROMOLECULARIZED ADENINE DERIVATIVES

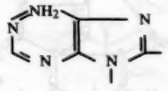
Piergiorgio Zappelli; Antonio Rossodivita; Rosario Pappa, all of Monterotondo, and Luciano Re, Rome, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Division of Ser. No. 705,012, Jul. 14, 1976, Pat. No. 4,091,203. This application Feb. 22, 1978, Ser. No. 880,290
Claims priority, application Italy, Jul. 15, 1975, 25419 A/75; May 4, 1976, 22958 A/76
Int. Cl.[2] C07H *19/20;* C07C *103/52*
U.S. Cl. 260—112.5 R 5 Claims

1. Macromolecularized adenine derivatives having the general formula:



wherein the radical



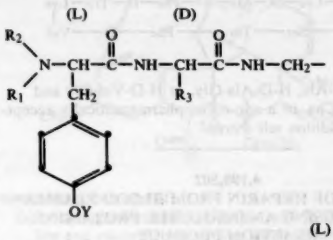
is derived from a compound selected from the group consisting of nicotinoylamide-adenine dinucleotide, nicotinoylamide-adenine dinucleotide phosphate, adenosine monophosphate, cyclic adenosine monophosphate, adenosine triphosphate, adenosine and adenine, and the nitrogen atom bound to the CO group is part of a compound selected from the group consisting of polylysine, omega-aminoalkyl polyanilamides, polysaccharide esters of omega-aminoalkyl carbamic acids, polyvinylamine, omega-aminoalkyl esters and omega-aminoalkyl amides of polyglutamic acid, aminoalkyl silanized glass microspheres, and polyethyleneimine.

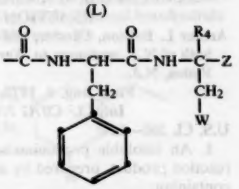
4,199,499
PHARMACOLOGICALLY ACTIVE PEPTIDES

Edward L. Smithwick, Jr.; Robert C. A. Frederickson, both of Indianapolis, and Robert T. Shuman, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 24, 1978, Ser. No. 936,437
Int. Cl.[2] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 R 65 Claims

1. A compound of the formula





and pharmaceutically acceptable non-toxic acid addition salts thereof, in which L and D define the chirality;

R_1 and R_2 independently are hydrogen or C_1–C_3 primary alkyl;

R_3 is C_1–C_4 primary or secondary alkyl, C_1–C_2 hydroxyalkyl, or $—CH_2CH_2—U—CH_3$, in which U is O or S;

R_4 is C_1–C_3 primary alkyl;

Y is hydrogen or acetyl;

Z is $—CH_2OH$ or

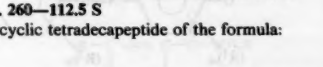
in which R_5 is C_1–C_3 alkyl or hydrogen; and W is isopropyl, $—VR_6$, or $—CH_2—X—CH_3$, in which V is O or S, R_6 is C_1–C_4 alkyl or aralkyl, and X is O, S, or $—CH_2—$.

4,199,500
PEPTIDES RELATED TO SOMATOSTATIN

James E. Shields, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 20, 1978, Ser. No. 962,502
Int. Cl.[2] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 S 8 Claims

1. A cyclic tetradecapeptide of the formula:



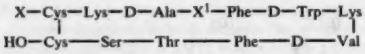
wherein X is H-Ala-D-Ala, H-D-Ala-Gly, or H-D-Val-Gly; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,199,501
PEPTIDES RELATED TO SOMATOSTATIN

James E. Shields, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 20, 1978, Ser. No. 965,536
Int. Cl.[2] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 S 8 Claims

1. A cyclic tetradecapeptide of the formula:



wherein:

X is H-Ala-D-Ala, H-D-Ala-Gly, or H-D-Val-Gly and X^1 is Phe or Cha, or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

4,199,502
REMOVAL OF HEPARIN FROM BLOOD PLASMA SAMPLES USING AN INSOLUBLE PROTAMINE REACTION PRODUCT

Arthur L. Babson, Chester, and James E. Turner, Morristown, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 4, 1978, Ser. No. 931,033
Int. Cl.[2] C07G *7/00;* A61K *37/08*
U.S. Cl. 260—121 2 Claims

1. An insoluble protamine/serum albumin/glutaraldehyde reaction product, prepared by incubating an aqueous solution containing:

A. From about 0.07 to about 0.13 grams of serum albumin;
B. From about 0.7 to about 1.3 grams of protamine sulfate;
C. From about 20 to about 30 milliliters of water; and
D. From about 3 to about 7 milliliters of a 10% aqueous glutaraldehyde solution;

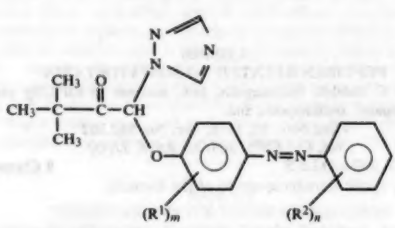
at a pH of from about 6 to about 12 and a temperature of from about 4° C. to about 10° C. overnight.

4,199,503
PHENYLAZOPHENYLOXYTRIAZOLYL COMPOUNDS

Costin Rentzea, Heidelberg; Eberhard Ammermann, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

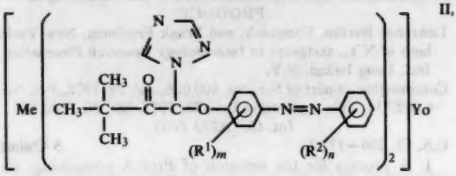
Filed Oct. 11, 1978, Ser. No. 950,321
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745827
Int. Cl.[2] C09B *45/22, 27/00;* A01N *9/20*
U.S. Cl. 260—146 R 2 Claims

1. A 1-(1,2,4-triazolyl-1)-1-(4′-phenylazo)-phenyloxy-3,3-dimethylbutan-2-one compound of the formula



I,

where R^1 and R^2 are identical or different and denote alkyl of a maximum of 4 carbon atoms, alkoxy of a maximum of 4 carbon atoms, alkylsulfoxy of a maximum of 4 carbon atoms, halogen, trifluoromethyl or nitro, m denotes one of the integers 0, 1, 2, 3 and 4, and n denotes one of the integers 0, 1, 2, 3, 4 and 5, a salt thereof or a metal complex of the formula



II,

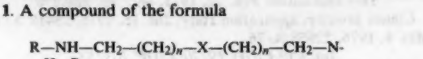
where Me is a copper, zinc, tin, manganese, iron, cobalt or nickel cation; Y is an anion of an inorganic acid; and 0 is the integer 1, 2, 3 or 4.

4,199,504
BRIDGED CATHRANTHUS ALKALOID DIMERS

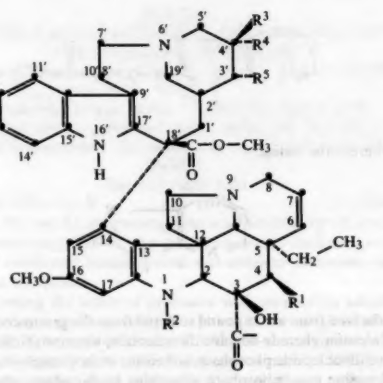
Robert A. Conrad, and Koert Gerzon, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 15, 1978, Ser. No. 905,667
Int. Cl.[2] C07D *519/04*
U.S. Cl. 260—244.4 6 Claims

1. A compound of the formula



wherein each R is



wherein R^1 is OH or O—CO—CH_3;

R^2 is CH_3, H or CHO;

when taken singly, one of R^3 and R^4 is H or OH, the other being C_2H_5, and R^5 is H; and when R^4 and R^5 are taken together, they form an α-epoxide ring and R^3 is C_2H_5;

X is S, O, Se—Se, or a bond wherein each n is 0, 1, or 2; and pharmaceutically-acceptable acid addition salts thereof.

4,199,505

PROCESS FOR THE PREPARATION OF ALKALOIDS OF THE LEUROSINE TYPE

Csaba Szántay; Lajos Szabó; Katalin Honty; Katalin Nógrádi; Karola Jovanovics; Eszter Dezseri; Lajos Dancsi; Csaba Lőrincz; Béla Szarvady, and Lajos Kovács, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed May 19, 1978, Ser. No. 907,626

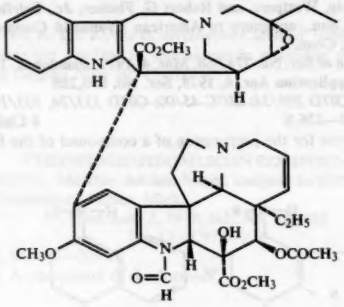
Claims priority, application Hungary, May 20, 1977, RI 632

Int. Cl.[2] C07D *519/04*

U.S. Cl. 260—244.4 **12 Claims**

1. A process for preparing a compound of the formula Ia or an acid addition salt thereof

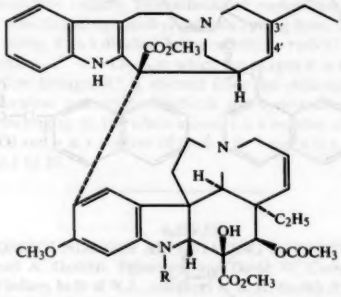
(Ia)



comprising the steps of

(a) dehydrating vincristine or vinblastine or an acid addition salt thereof with a sulfur or phosphorus halide or or oxyhalide in an organic solvent to produce a compound of formula II

(II)



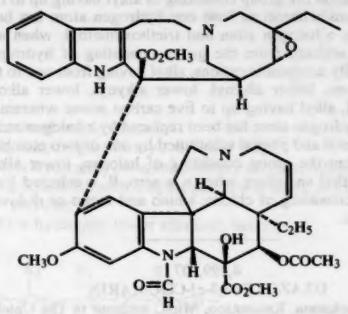
in which R is methyl when vinblastine is the starting material or is formyl when vincristine is the starting material;

(b) where R is methyl in formula II, oxidizing the compound of formula II with chromic acid to yield the compound of formula II where R is formyl; and

(c) selectively epoxidizing the double bond in the 3',4'-positions of the compound of formula II where R is formyl with an epoxidizing agent selected from the group consisting of oxygen, oxygen and an azo compound, cumyl hydroperoxide, and tert.-butyl·hydroperoxide to yield the desired product.

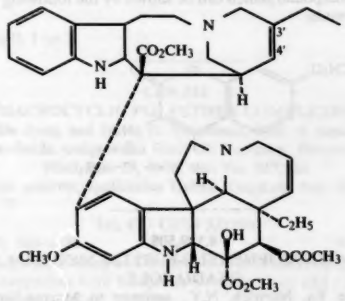
6. A process for the preparation of a compound of formula Ia or an acid addition salt thereof;

(Ia)



comprising the steps of

(a) coupling catharantine-N-oxide with N-desmethyl vindoline and subsequently adding an alkali metal borohydride to produce a compound of formula IIa



(b) selectively epoxidizing the compound formed during step (a) at the 3',4'-double bond in the presence of an acid with an epoxidizing agent selected from the group consisting of oxygen, oxygen and an azo compound, cumyl hydroperoxide and tert.-butyl hydroperoxide; and

(c) formylating the compound formed during step (b) with formic acid or with a mixture of formic acid and acetic anhydride to convert the NH group in the vindoline moiety to an N-CHO group thus yielding the desired product.

4,199,506

2,4-DISUBSTITUTED-5-THIAZOLECARBOXYLIC ACIDS AND DERIVATIVES

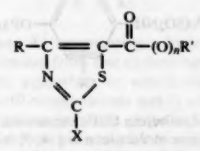
Robert K. Howe, Bridgeton, and Len F. Lee, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 15, 1978, Ser. No. 906,183

Int. Cl.[2] A01W *9/02;* **A01N** *9/12;* **C07D** *277/34*

U.S. Cl. 548—201 **28 Claims**

1. A compound having the formula



wherein n is zero or one; X is selected from the group consisting of chloro, bromo, iodo, fluoro, lower alkoxy, phenoxy and phenoxy substituted by one or two groups independently se-

lected from the group consisting of lower alkyl and halogen; R is selected from the group consisting of alkyl having up to five carbon atoms wherein at least one hydrogen atom has been replaced by a halogen atom and triethoxymethyl; when n is one, R' is selected from the group consisting of hydrogen, agriculturally acceptable cations, alkyl having from one to ten carbon atoms, lower alkenyl, lower alkynyl, lower alkoxy lower alkyl, alkyl having up to five carbon atoms wherein at least one hydrogen atom has been replaced by a halogen atom, benzyl, phenyl and phenyl substituted by one or two members selected from the group consisting of halogen, lower alkyl, trifluoromethyl and nitro; when n is zero, R' is selected from the group consisting of chloro, amino and mono or di-lower alkyl amino.

4,199,507

OXAZOLE [2,3-c]-COUMARIN

Herman Hoeksema, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

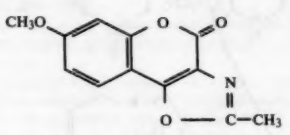
Division of Ser. No. 874,767, Feb. 6, 1978, Pat. No. 4,137,410, which is a continuation-in-part of Ser. No. 793,785, May 5, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 938,688

Int. Cl.[2] C07D *263/52*

U.S. Cl. 548—218 **1 Claim**

1. A compound which can be shown by the following structural formula:

VIII



4,199,508

2-(5-P-CHLOROPHENYL-2-FURYL)-5-METHYL-1,3,4-OXADIAZOLE

Chia-Nien Yu, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,055

Int. Cl.[2] C07D *271/10*

U.S. Cl. 548—143 **1 Claim**

1. The compound 2-(5-p-Chlorophenyl-2-furyl)-5-methyl-1,3,4-oxadiazole.

4,199,509

COPPER PHTHALOCYANINE DERIVATIVES

Alexander M. Irvine, Dean Park, and John B. Blackburn, Beith, both of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

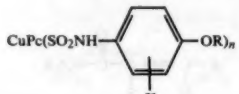
Filed Nov. 28, 1977, Ser. No. 855,500

Claims priority, application United Kingdom, Dec. 1, 1976, 50054/76

Int. Cl.[2] C09B *47/04*

U.S. Cl. 260—314.5 **3 Claims**

1. A copper phthalocyanine derivative having the formula



or a mixture thereof, wherein CuPc represents the residue of a copper phthalocyanine molecule, n is 1–4, X is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy or halo, and R is straight or branched chain alkyl of 1–22 carbon atoms, which is unsubstituted or substituted by one or more alkoxy, dialkylamino or alkylthio, the alkyl groups of which are straight or branched chain alkyl of 1–22 carbon atoms, and the alkyl groups in dialkylamino moiety are the same or different; or R is arylalkyl having 1–4 carbon atoms in the alkyl moiety thereof and the aryl moiety thereof being unsubstituted or substituted by one or more alkyl, alkoxy, carboxyalkyl or alkylcarbamoyl each having from 1–4 carbon atoms in the alkyl moiety thereof, arylcarboxyarylamido, arylcarbamoyl, nitro or halo.

4,199,510

PROCESS FOR OXIDATION OF 4-AMIDOTETRAHYDROBENZO [b]-THIOPHENES TO 7-KETO DERIVATIVES WITH COBALTIC SALTS

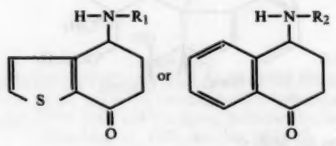
Arnold Zweig, Westport, and Robert G. Fischer, Jr., Fairfield, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 774,568, Mar. 4, 1977, abandoned. This application Apr. 4, 1978, Ser. No. 893,225

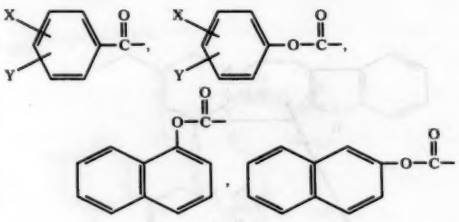
Int. Cl.[2] C07D *209/34*; C07C *45/00*; C07D *333/24, 333/16*

U.S. Cl. 260—326 S **4 Claims**

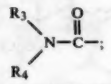
1. A process for the preparation of a compound of the formula:



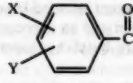
wherein R_1 and R_2 are each a substituent selected from the group consisting of alkanoyl C_1–C_7, halogen-substituted alkanoyl C_1–C_7, carboalkoxy C_1–C_4,



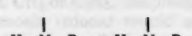
and



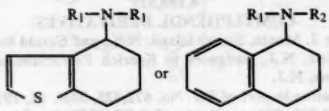
R_3 is a radical selected from the group consisting of hydrogen and alkyl C_1–C_4; R_4 is a substituent selected from the group consisting of hydrogen, alkyl C_1–C_8, alkanoyl (C_2–C_4), halogen-substituted alkanoyl (C_2–C_4) and



when the



moiety is cyclized, each represents a moiety selected from the group consisting of succinimido, maleimido and phthalimido; X and Y are each a radical selected from the group consisting of hydrogen, fluorine, chlorine, bromine, iodine, nitro, alkyl C_1-C_4; consisting essentially in the step of reacting a compound of the formula:



wherein R_1 and R_2 are as hereinabove defined; with a cobaltic carboxylate reactant in stoichiometric quantities at temperatures ranging from 20° C.-100° C.

4,199,511

CHLORENDIMIDOSILICON COMPOUNDS

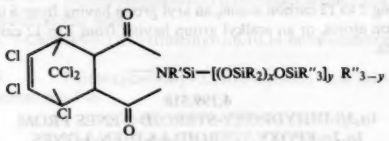
Richard C. McAfee, Adrian, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Filed Aug. 2, 1978, Ser. No. 930,253

Int. Cl.[2] C07F *7/18*

U.S. Cl. 260—326 E **4 Claims**

1. A compound of the formula



where R is selected from the class consisting of monovalent hydrocarbon radicals, halo-substituted monovalent hydrocarbon radicals and cyanoalkyl radicals having from 1 to 18 carbon atoms, R′ is a divalent hydrocarbonoxy radical having the formula $(—C—C—O—)_n$ in which the oxygen is in the form of an ether linkage, R″ is selected from the class consisting of monovalent hydrocarbon radicals and hydrocarbonoxy radicals having up to 18 carbon atoms, x is a number of from 0 to 20,000 and y is a number of from 0 to 3 and n is a number of from 1 to 10.

4,199,512

COMPOUNDS FOR ALLEVIATING HYPERTENSION

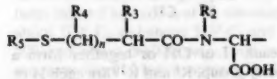
Miguel A. Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 876,977, Feb. 13, 1978, abandoned, which is a division of Ser. No. 773,864, Mar. 3, 1977, which is a division of Ser. No. 684,606, May 10, 1976, Pat. No. 4,053,651. This application Sep. 18, 1978, Ser. No. 943,422

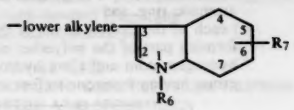
Int. Cl.[2] C07D *209/26, 209/24, 209/20*

U.S. Cl. 260—326.12 R **18 Claims**

1. A compound of the formula



-continued



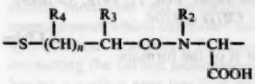
and salts thereof, wherein

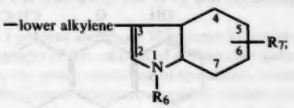
R_6 is hydrogen, formyl, or lower alkyl;

R_7 is hydrogen, halogen, hydroxy or lower alkoxy;

R_2, R_3 and R_4 each is hydrogen, lower alkyl, or phenyllower alkylene;

R_5 is hydrogen, lower alkanoyl, benzoyl or





and n is 0, 1 or 2.

4,199,513

MACROCYCLIC POLYETHER COMPLEXES

Feike De Jong, and David N. Reinhoudt, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

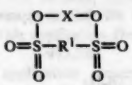
Filed Jun. 19, 1978, Ser. No. 917,124

Claims priority, application United Kingdom, Jun. 23, 1977, 26334/77

Int. Cl.[2] C07D *323/00*

U.S. Cl. 260—338 **9 Claims**

1. A chemical complex formed between a macrocyclic polyether compatible with barium or strontium ions and a disulfonate of the formula

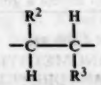


wherein X represents a barium or strontium atom and R^1 is from 1 to 10 carbon atoms and is an alkylene moiety, optionally substituted with an alkyl group; said macrocyclic polyether being selected from that class consisting of:

(A) macrocyclic polyethers consisting of 4 to 10

—O—Y—

units where Y represents the group



each of R^2 and R^3 representing a hydrogen atom or an alkyl group having from one to four carbon atoms and

(B) macrocyclic polyethers in which the polyether ring contains 4 to 10 oxygen atoms and in which

(a) each oxygen atom of the polyether ring is separated from the next oxygen atom by two carbon atoms,

(b) at least one pair of vicinal carbon atoms of the polyether ring also formed part of a carbocyclic aromatic ring selected from the class consisting of o-phenylene,

1,2-naphthylene, 2,3-naphthylene, 1,2-anthrylene and 2,3-anthrylene or a ring obtained by saturation of said aromatic ring, and

(c) each of the carbon atoms of the polyether ring only forming part of the polyether ring is bonded to (1) a hydrogen atom and (2) a hydrogen atom or an alkyl group having from one to four carbon atoms.

4,199,514

COMPOUND, FRENOLICIN B WHICH IS USEFUL AS AN ANTIBIOTIC

Satoshi Omura, Tokyo; Yuzuru Iwai, Narita; Juichi Awaya, Souka; Yoko Takahashi, Tokyo, and Ruiko Oiwa, Yokohama, all of Japan, assignors to The Kitasato Institute, Tokyo, Japan

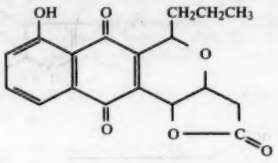
Filed Jan. 25, 1979, Ser. No. 6,461

Claims priority, application Japan, Feb. 17, 1978, 53-16452

Int. Cl.[2] C07D *493/04*

U.S. Cl. 260—343.3 R **1 Claim**

1. A compound frenolicin B of the formula:



4,199,515

NOVEL LONOMYCIN DERIVATIVES

Michio Yamagishi, Tokorozawa; Kazutoshi Mizoue, Urawa; Taku Mizutani, Ageo; Hiroshi Hara, Kitamoto; Sadafumi Omura, Ageo; Haruo Seto, Ueno, and Noboru Otake, Yokohama, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

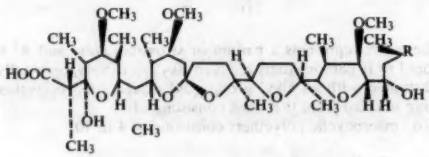
Filed Mar. 9, 1979, Ser. No. 18,935

Claims priority, application Japan, Mar. 16, 1978, 53-30187; Mar. 16, 1978, 53-30188

Int. Cl.[2] C07D *309/22*; A61K *31/35*

U.S. Cl. 260—345.7 R **3 Claims**

1. Novel lonomycin derivatives represented by the general formula



wherein R is 2-methyl-3-oxo-1-butenyl or 3-hydroxy-1-methoxy-2-methylbutyl, and pharmaceutically acceptable salts thereof.

4,199,516

2-METHYL-2-CYANOMETHYL-5-ISOPROPYL TETRAHYDROFURAN

Aldo Prevedello, and Maurizio Brunelli, both of San Donato Milanese, Italy, assignors to Anic, S.p.A., Palermo, Italy

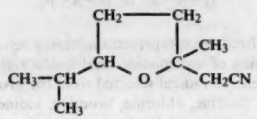
Division of Ser. No. 918,445, Jun. 23, 1978, Pat. No. 4,150,037, which is a continuation of Ser. No. 670,728, Mar. 26, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,507

Claims priority, application Italy, Mar. 27, 1975, 21724 A/75; Nov. 27, 1975, 29726 A/75

Int. Cl.[2] C07D *307/16*

U.S. Cl. 260—346.11 **1 Claim**

1. As a new composition of matter, 2-methyl-2-cyanomethyl-5-isopropyl tetrahydrofuran having the following structural formula:



4,199,517

CUMYLPHENOL DERIVATIVES

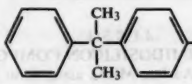
Salvatore J. Monte, Staten Island, N.Y., and Gerald Sugerman, Allendale, N.J., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

Continuation-in-part of Ser. No. 672,425, Mar. 31, 1976, Pat. No. 4,102,862. This application Jul. 20, 1978, Ser. No. 926,267

Int. Cl.[2] C07D *303/22*; C07C *43/20, 43/27, 69/24*

U.S. Cl. 260—348.63 **10 Claims**

1. Cumylphenol derivatives having the following formula:



wherein R is an acyl group having the formula, —CO—R′ ; a glycidyl group having from 3 to 6 carbon atoms; an alkenyl group having from 3 to 12 carbon atoms, or an aralkyl group having from 7 to 12 carbon atoms; and wherein R′ is an alkyl group having from 6 to 12 carbon atoms, an alkenyl group having 2 to 12 carbon atoms, an aryl group having from 6 to 12 carbon atoms, or an aralkyl group having from 7 to 12 carbon atoms.

4,199,518

1α,3β-DIHYDROXY-STEROID-5-ENES FROM 1α,2α-EPOXY-STEROID-4,6-DIEN-3-ONES

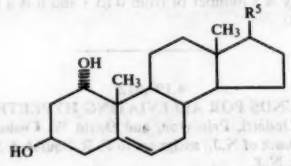
William R. Glave, Chicago; Richard L. Johnson, Melrose Park, and Arnold L. Hirsch, Oak Park, all of Ill., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Mar. 30, 1978, Ser. No. 891,846

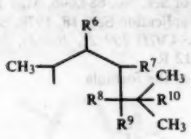
Int. Cl.[2] C07J *9/00*

U.S. Cl. 260—397.2 **6 Claims**

1. A process for the preparation of a compound of the formula

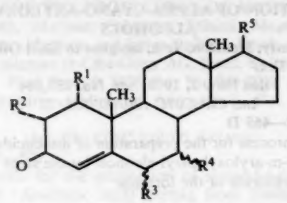


wherein R^5 represents a group of the formula



wherein R^6 and R^7 are each H or OH or together form a carbon-carbon bond or epoxy group, R^8 and R^{10} are each H or

OH, and R^9 is H, CH_3 or C_2H_5, comprising adding the alkali metal/liquid ammonia reduced steroid mixture which has attained thermodynamic equilibrium to a liquid ammonia-ammonium chloride quenching mixture wherein the steroid is a compound of the formula



wherein R^1 is OH and R^2 is H or R^1 and R^2 together form an epoxide group, R^3 represents H, OH or reductively eliminatable atom or group and R^4 is H or R^3 and R^4 together form a carbon-carbon bond and R^5 is as defined above.

4,199,519

HIGHER POLYALKENYL FATTY ACIDS AND ESTERS

Hiroshi Mishima; Akira Ogiso, and Shinsaku Kobayashi, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 788,699, Apr. 18, 1977, Pat. No. 4,151,357. This application Aug. 31, 1978, Ser. No. 938,356

Claims priority, application Japan, Apr. 24, 1976, 51-46937

Int. Cl.² C07C *57/02, 69/52*

U.S. Cl. 260—413 **3 Claims**

1. 7-Hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraenoic acid.

2. 7-Carboxy-3,11,15-trimethyl-2,6,10,14-hexadecatetraen-1-ol.

3. 7-Ethoxycarbonyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraen-1-ol.

4,199,520

RHODIUM CARBONYL SULFUR CLUSTER COMPOUNDS

Lowell A. Cosby; Rocco A. Fiato, and Jose L. Vidal, all of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 840,866, Oct. 11, 1977, Pat. No. 4,115,433. This application Jun. 28, 1978, Ser. No. 919,857

Int. Cl.² C07F *15/00*

U.S. Cl. 260—429 R **8 Claims**

1. A rhodium carbonyl sulfur cluster compound wherein the anion has the empirical formula, $[Rh_{17}(S)_2(CO)_{32}]^{-3}$, said anion being in association with a cation.

4,199,521

PROCESS FOR PRODUCING POLYHYDRIC ALCOHOLS AND DERIVATIVES

Leonard Kaplan, and Roy L. Pruett, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 1, 1978, Ser. No. 882,395

Int. Cl.² C07C *27/06, 29/16*

U.S. Cl. 260—449 L **4 Claims**

1. The process for producing alkane polyol(s) which comprises reacting oxides of carbon and hydrogen present in a feed containing sulfur in the −2 oxidation state, in a homogeneous liquid phase reaction mixture which (i) contains a rhodium carbonyl complex catalyst and copper or copper salts or mixtures thereof and (ii) is at an elevated temperature of between about 100° C. and about 375° C. and a pressure between about 500 and about 50,000 psig., said copper or copper salts or mixtures thereof being present in the reaction mixture in an amount sufficient to remove sulfur which is introduced to said reaction mixture in said feed in the −2 oxidation state after the reaction mixture is at said elevated temperature.

4,199,522

PROCESS FOR PRODUCING OLEFINS FROM CARBON MONOXIDE AND HYDROGEN

Craig B. Murchison, Midland, and Dewey A. Murdick, Hope, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 814,760, Jul. 11, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 944,228

Int. Cl.² C07C *1/04*

U.S. Cl. 260—449 R **29 Claims**

1. In a process for producing hydrocarbons by contacting carbon monoxide and hydrogen at reactive conditions, the improvement which comprises increasing the yield of olefinic hydrocarbons containing from two to four carbon atoms by contacting the carbon monoxide and hydrogen with a catalyst having a surface area less than about 100 m^2/g and consisting essentially of:

(A) between about 1 percent and about 95 percent by weight based upon the weight of the catalyst of at least one material selected from the group consisting of the sulfide, oxide or metal of molybdenum, tungsten, rhenium, ruthenium, nickel, palladium, rhodium, osmium, iridium and platinum; and

(B) between about 0.05 percent and about 50 percent by weight based upon the weight of the catalyst of at least one material selected from the group consisting of the hydroxide, oxide or salt of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, barium and thorium.

4,199,523

PROCESS FOR THE PRODUCTION OF HYDROCARBON MIXTURES

Walter Rottig, Oberhausen, Fed. Rep. of Germany, assignor to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 787,433, Apr. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 679,454, Apr. 22, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 973,755

Claims priority, application Australia, Apr. 22, 1976, 13224/76; Luxembourg, Aug. 13, 1975, 79509662; Belgium, Apr. 21, 1976, 166342; Canada, Apr. 22, 1976, 250791; German Democratic Rep., Apr. 22, 1976, 07192465

Int. Cl.² C07C *1/04*

U.S. Cl. 260—449.6 R **21 Claims**

1. In a process for the production of hydrocarbon mixtures by catalytic conversion of gas comprising carbon monoxide and hydrogen in fixed bed reactors at elevated temperatures and under superatmospheric pressure wherein said catalyst is arranged in from 2 to 10 layers in said reactors, the improvement which comprises,

(a) said reactors having a length of 0.5 to 4.5 meters,

(b) said pressure being 5 to 30 bars,

(c) said temperature being 250° to 370° measured in said catalyst,

(d) introducing fresh gas at a space velocity of about 1,000 to about 10,000 standard m^3 per m^3 of said catalyst per hour,

(e) recycling gas after contact with said catalyst, said recycle gas being introduced at a rate of about 5 to 25 times said space velocity,

(f) said fresh gas and said recycle gas constituting a total gas load, said total gas load being about 7,500 to about 50,000 standard m^3 per m^3 of said catalyst per hour,

(g) the linear velocity of said gas being from about 1 to 10 meters per second, based on standard conditions,

(h) the residence time of said total gas load in said catalyst being 0.5 to 1 second, based on standard conditions, and

(i) said catalyst having an internal surface area of about 5 to 150 m^2 per gram of said catalyst, whereby said mixtures contain at least 50% by weight of C_2 to C_4 hydrocarbons, based on the total weight of hydrocarbons having at least two carbon atoms, and at least 50% by weight of olefins based on the total weight of hydrocarbons having at least two carbon atoms.

4,199,524

STABLE LIQUID CARBODIIMIDE-CONTAINING POLYISOCYANATE COMPOSITIONS

Robert L. Schaaf, Wyandotte; Peter T. Kan, Plymouth, and Moses Cenker, Trenton, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 30, 1978, Ser. No. 955,956
Int. Cl.² C07C *119/055*
U.S. Cl. 260—453 SP **13 Claims**

1. A highly stable liquid 4,4'-diphenylmethane diisocyanate composition containing diphenylmethane diisocyanate-carbodiimide adducts having an isocyanate content of from 20 to 32 percent by weight prepared by heating 4,4'-diphenylmethane diisocyanate or crude mixtures thereof at a temperature between 180° C. and 250° C. for a period of from one hour to ten hours in the presence of from 0.001 part to 0.05 part per 100 parts of said diisocyanate of tris(chloromethyl)phosphine oxide and thereafter equilibrating the adduct formation.

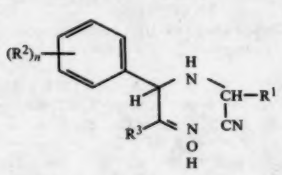
4,199,525

HYDROXYIMINO-SUBSTITUTED AMINOACETONITRILES

Charles J. Barnett, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 6, 1979, Ser. No. 27,627
Int. Cl.² C07C *119/00*
U.S. Cl. 260—453 RW **11 Claims**

1. A compound of the formula



(I)

wherein

R^1 is hydrogen or C_1–C_4 alkyl;

R^2 is hydrogen, halo, C_1–C_3 alkyl, or trifluoromethyl;

n is 0, 1 or 2, with the proviso that when n=2, only one ortho position may be substituted; and

R^3 is C_1–C_4 alkyl.

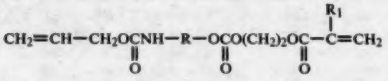
4,199,526

ALLYL-ACRYLIC MONOMERS, THEIR PREPARATION AND POLYMERS DERIVED THEREFROM

Jean-Pierre G. Senet, Melun, and Patrice M. Le Roy, Ballancourt sur Essone, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Aug. 31, 1977, Ser. No. 829,474
Claims priority, application France, Sep. 7, 1976, 76 26913
Int. Cl.² C07C *68/02, 69/96*; C08F *18/24*
U.S. Cl. 260—463 **3 Claims**

1. Allyl-acrylic monomers of the formula:



wherein R is an alkylene group having 1 to 4 carbon atoms and R_1 is selected from the group consisting of a hydrogen atom and a methyl group.

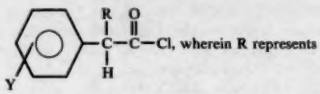
4,199,527

REMOVAL OF KETENE IMPURITIES IN THE PREPARATION OF ALPHA-CYANO-ARYLOXYBENZYL ALCOHOLS

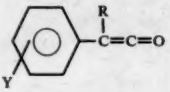
Walter L. Petty, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 2, 1978, Ser. No. 957,264
Int. Cl.² C07C *120/00, 121/75*
U.S. Cl. 260—465 D **5 Claims**

1. In the process for the preparation of insecticidal esters of alpha-cyano-m-aryloxybenzyl alcohols by the steps of preparing an acid chloride of the formula:



, a secondary alkyl group of from 3 to 6 carbon atoms and Y represents a hydrogen atom or halogen atom of atomic number 9 to 35, inclusive, by reacting the corresponding acid with thionyl chloride, purifying the acid chloride thus obtained by fractional distillation and reacting the purified acid chloride with a phenoxybenzaldehyde and a cyanide solution to yield the desired insecticidal product, the improvement which comprises reacting the purified acid chloride with anhydrous hydrogen chloride under conditions which substantially convert a ketone impurity of the formula:



which is generated and/or carried over in said distillation and is present in the purified acid chloride to the desired acid chloride, thereby avoiding further reaction of the ketene with said cyanide solution to yield an impurity which contaminates the desired insecticidal product.

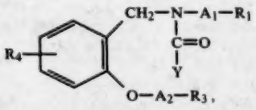
4,199,528

SUBSTITUTED AMIDES HAVING ANTIINFLAMMATORY ACTIVITY

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 916,979, Jun. 19, 1978, Pat. No. 4,156,079. This application Dec. 22, 1978, Ser. No. 972,315
Int. Cl.² C07C *91/16*
U.S. Cl. 260—501.18 **3 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein R_1 is alkyl, cycloalkyl or aryl; Y is alkyl, cycloalkyl, aryl, arylalkyl, styryl, or styryl substituted in the phenyl ring with a halogen, alkyl, alkoxy, trifluoromethyl, nitro or amino group; R_3 is alkylamino or dialkylamino; R_4 is alkoxy; A_1 is a saturated bond or an alkylene group having 1 to 4 carbon atoms; and A_2 is an alkylene group having 2 to 5 carbon atoms; wherein alkyl

and alkoxy are groups having 1 to 6 carbon atoms; cycloalkyl is a group having 3 to 7 carbon atoms; and aryl is phenyl or phenyl substituted with a halogen, alkyl, alkoxy, trifluoromethyl, nitro or amino group.

4,199,529

PROCESS FOR THE PRODUCTION OF AMINO-I-ACID

Bernt Bonath, Muttenz; Sebastian Stäubli, Magden; Hans Horisberger, Muttenz, and Istvan Székely, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Sep. 29, 1978, Ser. No. 947,291

Claims priority, application Switzerland, Oct. 3, 1977, 12048/77

Int. Cl.² C07C *139/00, 143/60*

U.S. Cl. 260—508 **5 Claims**

1. A process for the production of amino-I-acid (2-naphthylamino-5,7-disulfonic acid) starting from Tobias acid (2-naphthylamine-1-sulfonic acid), which comprises sulfonating Tobias acid with fuming sulfuric acid (oleum) isothermically at room temperature, further sulfonating the resulting 2-naphthylamine-1,5-disulfonic acid without isolation, by rapidly heating the reaction mixture to 110° to 140° C. to give 2-naphthylamine-1,5,7-trisulfonic acid, hydrolysing the trisulfonic acid in sulfuric acid having a concentration between 80 and 98%, at a temperature of 100°–180° C., to give the amino-I-acid, precipitating this latter from dilute sulfuric acid and isolating it from the reaction mixture.

4,199,530

14β-HYDROXYANDROSTANES

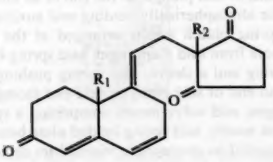
Zdenek Valenta, Fredericton, Canada, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 811,393, Jun. 29, 1977, Pat. No. 4,134,920. This application Oct. 12, 1978, Ser. No. 950,927

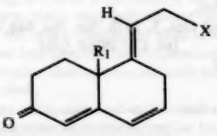
Int. Cl.² C07C *45/00, 49/46*

U.S. Cl. 260—586 C **4 Claims**

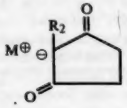
1. A process for the preparation of a compound of the formula:



wherein R_1 and R_2 are lower alkyl which comprises contacting a compound of the formula:



wherein R_1 is as above and X is bromo or chloro with a compound of the formula:



wherein R_2 is lower alkyl and $M\oplus$ is an alkali metal in the presence of an alkali metal iodide, said reaction being conducted in a medium comprising a polar aprotic solvent and a lower alkanol.

4,199,531

INTERMEDIATES FOR THE PRODUCTION OF QUINONES

Shinji Terao, Toyonaka, and Kaneyoshi Kato, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

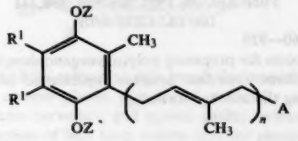
Filed Oct. 11, 1977, Ser. No. 840,806

Claims priority, application Japan, Oct. 19, 1976, 51/125736; Jul. 20, 1977, 52/87674; Jul. 20, 1977, 52/87675

Int. Cl.² C07C *147/06, 147/14, 43/22*

U.S. Cl. 260—607 AR **14 Claims**

1. A compound of the formula:



wherein R^1 is methoxy, Z is a protective group capable of protecting a hydroxyl group, A is halogen, arylthio, arylsulfinyl or arylsulfonyl, wherein aryl is phenyl or p-methylphenyl and n is an integer of from 1 to 9, inclusive.

4,199,532

METHOD FOR THE PRODUCTION OF HEXANITROSTILBENE

Isaac Angres, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 5, 1978, Ser. No. 966,674

Int. Cl.² C07C *79/10*

U.S. Cl. 260—645 **10 Claims**

1. A method of preparing 2,2',4,4',6,6'-hexanitrostilbene from 2,4,6-trinitrobenzyl chloride comprising:

(1) contacting

(a) an organic solvent phase comprising

(i) 2,4,6-trinitrobenzyl chloride;

(ii) a phase transfer catalyst of the formula

wherein X^- is a halide ion, and R_1, R_2, R_3, and R_4 are monovalent hydrocarbon radicals having a total sum of from 12 to 70 carbon atoms; and

(iii) an organic solvent selected from the group consisting of methylene chloride, chloroform, and 1,2-dichloroethane;

with

(b) an aqueous phase comprising

(i) an alkali metal hydroxide;

(ii) water;

and then

(2) isolating the product 2,2'4,4',6,6'-hexanitrostilbene.

4,199,533
CONVERSION OF METHANE

Sidney W. Benson, Palos Verdes Estates, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Nov. 3, 1978, Ser. No. 957,385
Int. Cl.[2] C07C 9/06, 11/04
U.S. Cl. 585—500 **12 Claims**

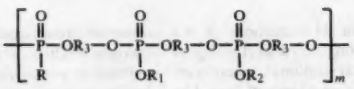
1. A method for converting methane into at least one higher molecular weight hydrocarbon, which comprises reacting a mixture of chlorine and a gas comprising methane in a mole ratio of methane to chlorine to about 1:1 to 10:1 under conditions to provide a reaction temperature of at least 700° C. and to form as products hydrogen chloride and hydrocarbon selected from ethane, ethylene, and mixtures thereof.

4,199,534
POLY (OXYORGANOPHOSPHATE/PHOSPHONATE) AND PROCESS FOR PREPARING

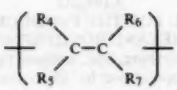
Ralph B. Fearing, Bardonia, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 20, 1978, Ser. No. 898,241
Int. Cl.[2] C07F 9/09
U.S. Cl. 260—928 **19 Claims**

1. A process for preparing poly(oxyorganophosphate/phosphonate) flame retardant product represented as repeating units having the average formula:



wherein m is an integer from 1 to 50; R, R_1, and R_2 are the same or different radicals selected from saturated hydrocarbon radical, alkaryl radical, aralkyl radical, and aryl radical; and R_3 is:



wherein R_4, R_5, R_6, and R_7 are the same or different radicals selected from hydrogen atom, alkaryl radical, aralkyl radical, aryl radical, saturated hydrocarbon radical, and halogenated hydrocarbon radical; by a two step sequential reaction which comprises:

(1) reacting diorgano organophosphonate represented by the formula:

wherein R, R_1, and R_2 are the same or different organic radicals selected from saturated hydrocarbon radical, alkaryl radical, aralkyl radical, and aryl radical; with reactant consisting of (i) phosphorus oxide reagent, or (ii) phosphorus oxide reagent with an alcohol, to yield a metaphosphate/phosphonate reaction product, wherein the mole ratio of said diorgano organophosphonate to said phosphorus oxide reagent (as P_2O_5) is in the range from about 1:1 to about 2.5:1, and said optionally employed alcohol is not in excess of one mole of alcohol hydroxyl per three moles of phosphorus anhydride unit formed by the reaction of phosphorus oxide reactant with diorgano organophosphonate, and;

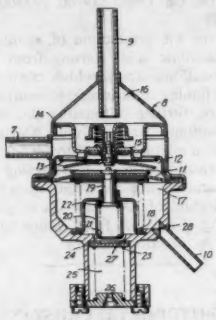
(2) reacting the reaction product of step (1) with reactant comprising (I) epoxide, or (II) epoxide with an alcohol to yield poly(oxyorganophosphate/phosphonate) product.

11. The product formed from the process of claim 1.

4,199,535
DIAPHRAGM PUMP

Ernst Kuhlen, Willich, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co., KG, Neuss, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,840
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807514
Int. Cl.[2] F02M 7/08
U.S. Cl. 261—34 A **1 Claim**

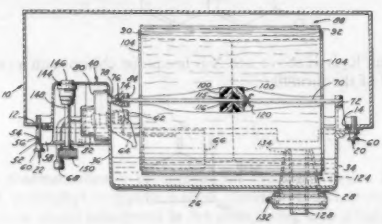


1. A fuel diaphragm pump comprising: a working chamber; an auxiliary chamber; a diaphragm separating said auxiliary chamber from said working chamber; compression spring means in said auxiliary chamber; an internal combustion engine intake pipe connected to said auxiliary chamber downstream from the throttle flap of a carburetor for introducing vacuum pressure; a plunger; valve means; said diaphragm opening said valve by means of said plunger at the end of an intake stroke of said pump for atmospherically venting said auxiliary chamber; moveable spring clutch means arranged at the end of said plunger remote from said diaphragm, said spring clutch means having a spring and a sleeve, said spring pushing said sleeve away from an end of said plunger, said end facing away from said diaphragm; said valve means comprising a spring-loaded plate and a jet nozzle, said spring loaded plate being located in a space connected to atmosphere via said jet nozzle.

4,199,536
ROTARY DRUM HUMIDIFIER

Richard J. Yeagle, Hartland, Mich., assignor to General Filters, Inc., Novi, Mich.

Filed Oct. 5, 1978, Ser. No. 948,721
Int. Cl.[2] B01F 3/04
U.S. Cl. 261—92 **3 Claims**



1. A humidifier apparatus comprising a housing having a water reservoir therein and means for maintaining the water at

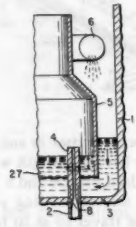
a substantially constant level in said reservoir, a porous evaporator means rotatably mounted in said housing and adapted to be wetted by the water in said reservoir, the bottom wall of said reservoir having an opening therein terminating in a downwardly extending annular rim, a manually operated combined tubular and flexible non-metallic over-flow stem and quick drain tube assembly in the form of a wide mouthed generally conically shaped vessel which terminates in a tube, with the wide mouth end of said vessel receiving said rim, means securing the vessel of said combined over-flow stem and drain tube assembly of said combined over-flow stem and drain tube assembly to said rim, said assembly having two positions, one position being with the tube telescopically located within said vessel and forming said over-flow stem, with said assembly located within said reservoir and extending upwardly from the bottom wall of said reservoir whereby excess water in said reservoir can over-flow said stem, and a second position being where the vessel and tube are located outside of said reservoir and extend downwardly away from the bottom wall of the reservoir to permit the water in the reservoir to drain through said vessel and tube.

4,199,537

LIQUID DISTRIBUTOR FOR THIN-FILM, TUBE-BUNDLE APPARATUS

Umberto Zardi, San Donato Milanese, and Vincenzo Lagana', Milan, both of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Division of Ser. No. 724,601, Sep. 20, 1976, Pat. No. 4,134,939. This application Oct. 13, 1978, Ser. No. 951,158
Claims priority, application Italy, Sep. 26, 1975, 27681 A/75
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—112 **4 Claims**



1. Tube-bundle, thin-film apparatus for the treatment of a liquid including a shell, a horizontal tube plate supported in said shell and a vertically arranged thin-film tube-bundle depending therefrom, wherein the improvement comprises a liquid distributor having:

(a) a bell having a lower edge resting on the top of said horizontal tube plate, said bell having an open top and openings in the edge resting on said tube plate and an outer diameter less than the inner diameter of said shell to provide an annular zone above said tube plate between the bell and the shell;

(b) a foraminous collar mounted in the shell adjacent the top of said bell and adapted to feed liquid to said annular zone;

(c) a conduit extending through the wall of said shell and communicating with said foraminous collar to supply liquid thereto, said liquid flowing into the annular zone and onto the plate wherein said liquid flows through the openings in the edge and creates a liquid head in the bell;

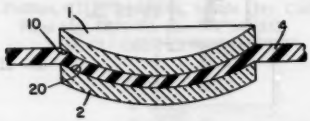
(d) distribution sleeves extending through and projecting above said tube plate and connected to the respective tubes comprising said tube bundle, each of said sleeves being formed from a cylindrical pipe and attached at its lower end to its associated tube and having an inside diameter smaller than the inside diameter of said associated tube, and having at least one set of bores extending through its wall tangentially to the inner surface of said sleeve wall above said tube plate and below the liquid head so that liquid may be fed through said distributor sleeves and along the inside thereof to their respective associated tubes and caused to flow over the inner surfaces of said tubes in thin films.

4,199,538

METHOD FOR MAKING HOT-PRESSED THERMOPLASTIC ELEMENTS FOR GLASS-PLASTIC LENSES

Shy-Hsien Wu, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 5, 1978, Ser. No. 939,121
Int. Cl.[2] B29D *11/00*; B29C *3/00*
U.S. Cl. 264—1 **4 Claims**



1. A method for reforming thin, tough thermoplastic film to provide a curved plastic element of nominally zero focal power, precise curvature, and optical quality, while avoiding the introduction of heat loop defects into the element, which comprises the steps of:

selecting for reforming a tough thermoplastic film having a thickness less than or equal to about 0.015 inches;

heating the thermoplastic film to a temperature above its glass transition temperature while pressing the film between a rigid reforming surface of convex curvature and a rigid reforming surface of concave curvature, each of said surfaces being finished to optical quality and having the same nominal diopter curvature, the convex reforming surface having a radius of curvature which is about 1–25 mils less than the radius of curvature of the concave reforming surface; and cooling the thermoplastic film to a temperature at least below its glass transition temperature prior to separating the film from the reforming surfaces.

4,199,539

METHOD FOR MONITORING AND CONTROLLING THE OPERATION OF A DUAL PLATEN PRESS

Pieter J. von Herrmann, and Ronald S. Williams, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 641,327, Dec. 16, 1975, abandoned. This application Jan. 23, 1978, Ser. No. 871,738
Int. Cl.[2] G21C *21/00*
U.S. Cl. 264—0.5 **7 Claims**

1. A method for monitoring the operation of a dual platen press including a first platen and a second platen subject to displacement with variable velocity toward and away from each other during a cycle of operation, the method comprising the steps of:

indicating the displacement of said first platen;

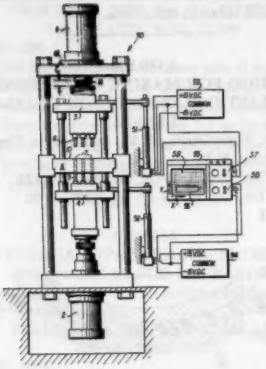
indicating the displacement of said second platen; and

imposing said displacements on orthogonal axes such that said displacements jointly control the motion of a point which traces a first lissajous figure representative of the displacement and relative velocity of said platens.

7. A method for monitoring the operation of a dual platen press used in the manufacture of nuclear fuel pellets, said press including a first platen and a second platen subject to displacement with variable velocity toward and away from each other during a cycle of operation, the method comprising the steps of:

generating a first electrical signal representative of the displacement of said first platen;

generating a second electrical signal representative of the displacement of said second platen; and



imposing said signals on orthogonal axes such that said signals jointly control the motion of a point which traces a first lissajous figure representative of the displacement and relative velocity of said platens.

4,199,540

MODIFIED POLYCARBONATES AND A PROCESS FOR THEIR PREPARATION

Siegfried Adelmann; Dieter Margotte, and Werner Nouvertne, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 945,150

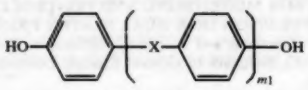
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746140; Jul. 4, 1978, 2829257

Int. Cl.[2] B01D *47/00*; C08F *8/18, 8/34*

U.S. Cl. 264—22 **12 Claims**

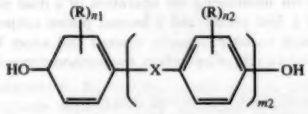
1. A process for the modification of a thermoplastic aromatic polycarbonate prepared from

(a) between about 0 and 95 mol % of diphenols of the general formula (I)



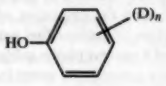
(I)

(b) between about 5 and 100 mol % of diphenols of the general formula (II)



(II) and

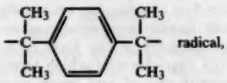
(c) between about 1 and 5 mol % of monophenols of the general formula (III)



(III)

the mol percentages being relative to the sum of the mols of diphenols I and II, wherein

X denotes a single bond or a C_1 to C_8 alkylene, C_2 to C_8 alkylidene, C_5 to C_{15} cycloalkylene, C_5 to C_{15} cycloalkylidene, O, S, SO, SO_2 or



radical,

R denotes a halogen atom or a primary alkyl, secondary alkyl or alkenyl radical,

m_1,m_2—0 or 1,

n_1 and n_2 are 0, 1, 2, 3 or 4, and the sum of n_1 and n_2 must be at least 1 in each case,

n is 1, 2, 3, 4 or 5 and

D denotes a hydrogen or halogen atom or an alkyl or β,γ-unsaturated alkyl radical

comprising irradiating the polycarbonates with UV light, after adding between about 1% and 5% by weight, relative to the weight of polycarbonate, of a photoinitiator.

4,199,541

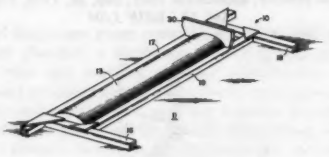
CONCRETE METHOD AND EQUIPMENT

George E. McFarland, 1133 W. Tamarisk St., Phoenix, Ariz. 85041

Filed Apr. 7, 1978, Ser. No. 894,496

Int. Cl.[2] E01C *11/00*

U.S. Cl. 264—34 **3 Claims**



1. A method of producing a riser in and integral with concrete flatwork, said riser having a length which is longer than the wheel base of a standard vehicle and a width substantially smaller than its length, said riser being positioned across a regular path of vehicular travel so as to be engaged by said vehicle comprising the steps of

placing a riser frame having said length and said width on the uncured concrete flatwork, said frame positioned across said path of vehicular travel;

generally filling the frame with concrete having a slump of about 4 in the shape of a dome;

shaping the filling material into the general shape of the riser with a shaper having a cross-section complementary to the shape of the desired riser;

removing the frame; and

working the dome-shaped filling into the finished riser.

4,199,542

CONTINUOUS VULCANIZATION METHOD AND APPARATUS

Challen E. Taylor, Portadown, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 826,097, Aug. 19, 1977, abandoned, which is a continuation of Ser. No. 664,606, Mar. 8, 1976, Pat. No. 4,053,550, which is a continuation-in-part of Ser. No. 506,386, Sep. 16, 1974, abandoned. This application Dec. 23, 1977, Ser. No. 863,756

The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.[2] B29H *5/01*

U.S. Cl. 264—563 **15 Claims**

1. Apparatus for continuously vulcanizing long lengths of

unsheathed and unvulcanized elastomeric or plastomeric hose product comprising:

a horizontal pressure chamber;

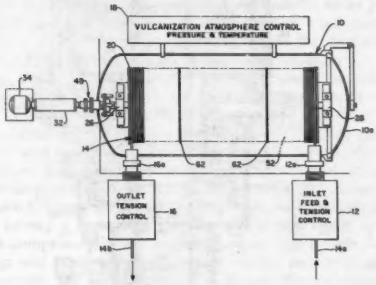
means providing a vulcanization atmosphere within the chamber;

pressure retaining inlet means for feeding the hose product into the chamber at a minimum of tension such that any internal orientation of the hose structure is maintained upon entry into the chamber;

pressure retaining outlet means in spaced horizontal relationship to the inlet means for drawing out completely vulcanized hose product from the chamber in synchronism with the amount of hose product entering the chamber at the inlet means;

a driving member and at least one idler member horizontally mounted in parallel spaced apart positions for rotation within the chamber, the relationship of the driving and idler members being such that portions of helically wound convolutions of hose product contact both members while other portions are free of any contact with either member and completely exposed to the vulcanization atmosphere, the hose product following a helical path about the driving and idler members from the inlet to the outlet;

a resilient diaphragm disposed on the surface of at least one of said members in a manner to support hose product thereon in spaced positions along the length thereof while the other of said members has a contoured surface of substantially concave positions throughout its length such



as to accept helical convolutions of hose product therein and reposition said product on the diaphragm in a next successive and advanced helical position, and

means connected to said driving member to rotate said member and thus effect movement of the material through the chamber from the inlet to the outlet means.

13. A method of continuously vulcanizing long lengths of flexible unvulcanized elastomeric or plastomeric material by passing said material in a continuous manner through a chamber having a vulcanization atmosphere therein, the method comprising the steps of:

feeding a substantially continuous long length of unvulcanized material into the chamber through an inlet that provides a sufficient pressure seal while also moving the material into the chamber at a minimum of tension such that the structural orientation of the material is substantially unaffected;

providing a horizontally positioned rotary driving member and at least one parallel spaced idler member within the chamber the surface of one of said members having a resilient elastomeric diaphragm disposed on its surface for receiving the continuous material thereon while the other of said members has a contoured surface to position the material in successive positions along the length of the diaphragm disposed on the opposite member;

winding the material in a substantially helical path about both driving and idler members such that convolutions of the material contact both members while portions thereof are free of contact with either member and completely exposed to the vulcanization atmosphere within the chamber;

drawing completely vulcanized material out of the chamber through an outlet that provides a sufficient pressure seal while also maintaining synchronism with the amount of material being fed into the chamber at the inlet; and

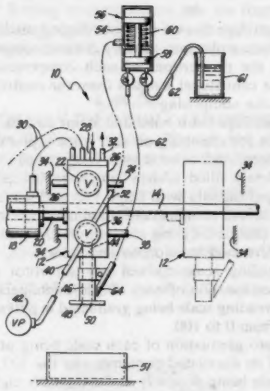
driving said driving member to move the material through the chamber in a continuous moving helical path from the inlet to the outlet.

4,199,543

TESTING APPARATUS FOR DISPENSING A FLUID

Robert E. Phillips, 12217 Iredell St., Studio City, Calif. 91604

Filed Sep. 14, 1978, Ser. No. 942,333
Int. Cl.[2] G01N 1/10, 1/14
U.S. Cl. 422—63 **1 Claim**



1. In a testing apparatus which includes a carrier for use in transporting a specimen from a first location to another location, means for moving said carrier from said first location to said other location and back to said first location, a vacuum source, a vacuum holding means for holding a specimen on said carrier through the use of a vacuum, a line connecting said vacuum source to said holding means, said line including a valve, and control means for operating said valve so that a vacuum is supplied to said holding means when said carrier is in said first location and as said carrier is moved to said other location and is not supplied to said holding means as said carrier is moved from said other location back to said first location in which the improvement comprises:

a pump means for pumping a predetermined quantity of a solution each time said pump means is actuated,

vacuum responsive operating means for operating said pump means only once each time a vacuum is supplied to said operating means,

conduit means leading from the outlet of said pump means to said carrier for conveying a fluid pump by said pump means to said carrier,

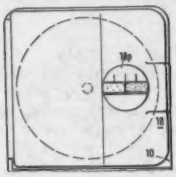
said valve comprising a three-way control valve, one port of which is connected to said vacuum source, one port of which is connected to said holding means, and another port of which is connected to said operating means,

said control means being connected to said valve so as to actuate said valve so that a vacuum is no longer supplied to said holding means and is supplied to said operating means each time said carrier is in said other location.

4,199,544
READ-OFF DEVICE FOR MEDICAL SAMPLES

Franz Mühlbock, Münich; Akos Kárpáty, Otterfing, and Wilhelm Pross, Münich, all of Fed. Rep. of Germany, assignors to Compur-Electronic Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 750,769, Dec. 15, 1976, Pat. No. 4,128,400. This application May 4, 1978, Ser. No. 902,626
The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.
Int. Cl.[2] G01N *33/16*
U.S. Cl. 422—72 **1 Claim**



1. A centrifuge device for centrifuging medical samples to separate the samples into visually distinct components and for measuring the proportions of such components without removing the centrifugal samples from the centrifuge, said centrifuge device comprising

(a) a centrifuge rotor rotatable about an axis,

(b) means for clamping on said rotor a plurality of tubular containers each open at both ends and each adapted to be completely filled with a sample to be tested, and each arranged radially with respect to said axis,

(c) each of said containers being of the same length and each being clamped, during rotation of said rotor, in a definite predetermined location on said rotor,

(d) a reading scale marked on said rotor alongside the clamped location of each of said containers,

(e) each reading scale being graduated in percentage graduations from 0 to 100,

(f) the zero graduation of each scale being precisely at one end of its associated container and the 100 graduation of the scale being precisely at the opposite end of its associated container when the container is in clamped position on the rotor, and

(g) a housing surrounding said rotor and said containers thereon.

4,199,545
FLUID-WALL REACTOR FOR HIGH TEMPERATURE CHEMICAL REACTION PROCESSES

Edwin Matovich, Brea, Calif., assignor to Thagard Technology Company, Irvine, Calif.

Continuation of Ser. No. 606,222, Aug. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 271,560, Jul. 13, 1972, Pat. No. 3,933,434. This application May 2, 1977, Ser. No. 792,858
Int. Cl.[2] B01J *1/00*
U.S. Cl. 422—112 **37 Claims**

1. In a high temperature reactor wherein substantially all of the heat is supplied by radiation coupling, comprising

(a) a reactor tube having an inlet end and an outlet end, the interior of the tube defining a reactor chamber, the reactor tube being made of a porous refractory material capable of emitting sufficient radiant energy to raise the temperature of reactants within the reactor tube to a level required to initiate and sustain the desired chemical reaction, the pores of the refractory material being of such diameter as to permit a uniform flow of sufficient inert fluid which is substantially transparent to radiant energy through the tube wall to constitute a protective blanket for the radially inward surface of the reactor tube;

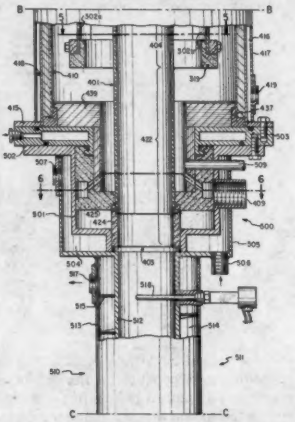
(b) a fluid-tight, tubular pressure vessel enclosing the reactor tube to define an inert fluid plenum between the reactor tube and the pressure vessel, the inlet and outlet ends of the reactor tube being sealed from the plenum; the pressure vessel having an inlet for admitting the inert fluid which is directed under pressure into the plenum and through the porous tube wall into the reactor chamber;

(c) means for introducing at least one reactant into the reactor chamber through the inlet end of the reactor tube, the reactants being directed in a predetermined path axially of the reactor tube and being confined by the protective blanket substantially centrally within the reactor chamber and out of contact with the inner wall of the reactor tube;

(d) electrical means disposed within the plenum and spaced radially outwardly of the reactor tube for heating the reactor tube to the temperature level at which it emits sufficient radiant energy to initiate and sustain the desired chemical reaction, the radiant energy being directed centrally therewithin substantially coincident with at least a portion of the path of the reactants; and

(e) a circumferential heat shield disposed within the pressure vessel and radially outwardly of the heating means, the heat shield reflecting radiant energy toward the reactor tube;

the improvement in combination therewith comprising:



(i) a reactor-tube assembly, including

(i.1) the reactor tube of paragraph (a) of the preamble, the reactor tube being made of a porous fabric of a fibrous, refractory material;

(i.2) a first support ring having an opening passing therethrough, the first support ring being secured to the inlet end of the reactor tube with the opening of the support ring generally coaxial with the opening in the inlet end of the reactor tube so that the opening of the first support ring communicates with the interior of the reactor tube through the inlet-end opening; and

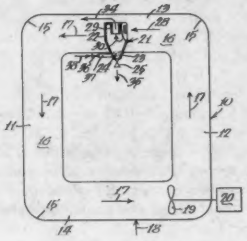
(i.3) a second support ring having an opening passing therethrough, the second support ring being secured to the outlet end of the reactor tube with the opening of the support ring generally coaxial with the opening in the outlet end of the reactor tube so that the opening of the second support ring communicates with the interior of the reactor tube through the outlet-end opening; and

(ii) means for attaching the first and the second support rings to the pressure vessel to position the reactor tube within the pressure vessel.

4,199,546
MANUFACTURE AND RECOVERY OF OLEFIN POLYMER PARTICLES

William Kirch, Clinton, Iowa, assignor to Chemplex Company, Rolling Meadows, Ill.

Filed Mar. 16, 1978, Ser. No. 887,668
Int. Cl.[2] B01J 8/00
U.S. Cl. 422—132 8 Claims

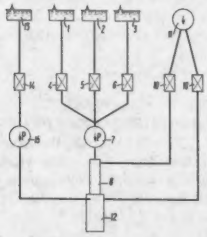


1. Apparatus for producing and recovering solid polyolefin particles in a particle form olefin polymerization process, comprising: means for conducting a flowing liquid stream comprising liquid diluent, olefin monomer and catalyst for the polymerization and the resulting particulate polyolefin under polymerizing heat and pressure conditions through a polymerization zone; a liquid cyclone separator; means for directing a portion of said flowing stream through said separator for producing a concentrated slurry of the particles and a separate relatively clear liquid; means for returning said relatively clear liquid to said polymerization zone; means for directing said concentrated slurry to a place of recovery of the solid polyolefin; and heat exchange means between said liquid in said polymerization zone and liquid in said separator for maintaining said portion of said stream within the separator at substantially the same temperature as said flowing liquid, said cyclone separator having a separating portion within said liquid stream which comprises said heat exchange means and thereby maintaining said portion of said stream within the separator at substantially the same temperature as said flowing liquid to continue said polymerizing conditions while said liquid stream is passing through said separator.

4,199,547
DEVICE FOR PRODUCING FOAM PLASTICS

Boris V. Levinsky; Viktor G. Pyatakov; Andrei A. Medunin, and Vladimir A. Moskvitin, all of Irkutsk, U.S.S.R., assignors to Irkutsky Gosudarstvenny NauchnoIssledovatelsky Institut Redkikh I Tsvetnykh Metallov "Irgiredmet", Irkutsk, U.S.S.R.

Filed Dec. 12, 1977, Ser. No. 859,795
Int. Cl.[2] B01J 8/00; B01F 5/00; B29D 27/00; C08J 9/00
U.S. Cl. 422—133 2 Claims

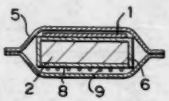


1. An apparatus for producing urea-formaldehyde foam plastics, comprising: separate tanks for urea-formaldehyde resin, water, foaming agent and curing catalyst; proportioners for each tank, the inlets whereof connected to said tanks; a first pump connected to the outlets of the proportioners for the resin, foaming agent and water, for delivery of said components to a foaming chamber; a second pump connected to the outlet of the proportioner for the catalyst, for the delivery thereof to a curing chamber; said foaming chamber to receive the resin, water and foaming agent delivered by the first pump; said curing chamber to receive the curing catalyst delivered by the second pump; two coaxially arranged pipes, inner and outer, forming an annulus; said inner pipe adjoining the foaming chamber and communicating with the curing chamber; said outer pipe communicating with the foaming chamber and adjoining the curing chamber; the cross section of the curing chamber with the adjoining outer pipe being 1.6 to 3 times that of the foaming chamber; the ratio of the chamber length and its diameter being 500 to 800 for the foaming chamber and no less than 600 for the curing chamber; connections on said outer pipe arranged diametrically opposite each other to allow entry of the curing catalyst into the annulus; a compressor and proportioners for feeding compressed air into the foaming chamber and for feeding compressed air into the curing chamber, resulting in dispersion of the curing catalyst in the foam.

4,199,548
THERMALLY DIFFUSIBLE COMPOSITES

Keisuke Kaiho; Risaburo Yoshida; Yusaku Ide, and Takeshi Hirose, all of Kyobashi, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1978, Ser. No. 900,558
Claims priority, application Japan, Jun. 10, 1977, 52/67817; Jun. 16, 1977, 52/70513; Dec. 20, 1977, 52/152370
The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.
Int. Cl.[2] F24J 1/00, 3/00; A61K 9/72; A01N 17/04
U.S. Cl. 422—305 34 Claims



1. A thermally diffusible composite comprising:
(1) a thermally diffusible medicine for expelling or exterminating noxious organisms and
(2) a thermogenic composition as the heat source for said thermally diffusible medicine, comprising
(A) at least one member selected from the group consisting of sulphides, polysulphides and hydrosulphides of alkali metals, and hydrates thereof and
(B) at least one member selected from the group consisting of carbonaceous material, iron carbide and activated clay.

4,199,549
METHOD OF OPERATING AN INCINERATOR

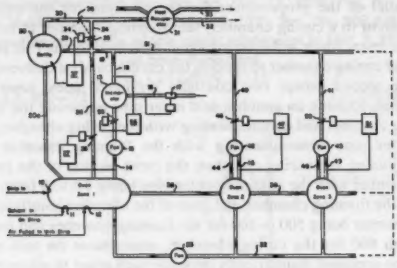
Charles R. Wilt, Jr., Upper St. Clair Township, Allegheny County, and Floyd L. Schauermann, Gibsonia, both of Pa., assignors to Salem Corporation, Pittsburgh, Pa.

Division of Ser. No. 619,058, Oct. 2, 1975, Pat. No. 4,087,923, which is a continuation-in-part of Ser. No. 467,647, May 7, 1964, abandoned, which is a division of Ser. No. 396,668, Sep. 13, 1973, Pat. No. 3,868,779. This application Dec. 7, 1977, Ser. No. 858,357
Int. Cl.[2] B01D 53/34
U.S. Cl. 423—210 7 Claims

1. A method of operating an incinerator for the burning of combustible material supplied thereto with diluents mixed in a gaseous stream, comprising the steps of:

(a) regulating to a constant rate the fuel input to the incinerator,

(b) controlling to a substantially constant value the temperature of the mixed gaseous stream entering the incinerator, and



(c) controlling the quantity of the mixed gaseous stream entering the incinerator as a function of the temperature of the gaseous stream at the incinerator outlet.

4,199,550

DEVICE FOR THE UNIFORM DOSING OF FAECAL MATTER FOR COMPONENT DETECTION

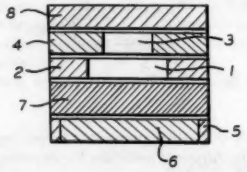
Hans Wielinger, and Walter Rittersdorf, both of Mannheim-Waldhof, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Jun. 21, 1978, Ser. No. 917,718

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2729924

Int. Cl.[2] G01N *33/16*

U.S. Cl. 422—58 **7 Claims**



1. A device for the uniform dosing of an amount of faeces onto reagent paper for the detection of a component material in the faeces, comprising a test paper for detecting a component material in faeces and a template disposed over one surface of the test paper and having a given thickness and comprising at least one set of two superposed openings, each set comprising a first opening and a second disposed between the first opening and the test paper and having a larger area than and encompassing the area of the first opening.

4,199,551

RECOVERY OF MOLYBDENUM AND URANIUM FROM ACTIVATED CHARCOAL CONTAINING MOLYBDENUM AND RESIDUAL URANIUM

John M. Laferty, Wheatridge; James L. Johnson, Lakewood, and Blair T. Burwell, Golden, all of Colo., assignors to Amax Inc., Amax Center, Greenwich, Conn.

Filed Jan. 13, 1978, Ser. No. 869,338

Int. Cl.[2] C01G *43/00, 39/00*

U.S. Cl. 423—6 **14 Claims**

1. A process for recovering molybdenum as a solution from activated charcoal containing substantial amounts of molybdenum and residual amounts of uranium corresponding to over 500 ppm U_3O_8 which comprises;

selectively stripping said uranium with an aqueous solution of pH value less than about 5.5 to remove selectively said U_3O_8, and then stripping said charcoal of said molybdenum with an alkaline solution, the concentration of said alkaline solution being such as to provide a pregnant solution containing at least about 15 gpl molybdenum and substantially less than 500 ppm U_3O_8.

8. A process for recovering molybdenum as a solution from a bed of activated charcoal containing substantial amounts of molybdenum and residual amounts of uranium corresponding to over 500 ppm U_3O_8 which comprises;

selectively stripping said uranium with an aqueous solution of pH value less than about 5.5 to remove selectively said U_3O_8, and then stripping said bed of said molybdenum with an ammonia solution of predetermined concentration sufficient to recover molybdenum therefrom and provide a pregnant solution containing molybdenum substantially in excess of about 15 gpl and containing substantially less than 500 ppm U_3O_8.

4,199,552

PROCESS FOR THE PRODUCTION OF SYNTHETIC RUTILE

Theodore A. Rado, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed May 26, 1978, Ser. No. 910,051

Int. Cl.[2] C01G *23/04*

U.S. Cl. 423—83 **9 Claims**

1. A process of improved thermal efficiency for the production of synthetic rutile from an ore containing titanium and iron, comprising:

introducing said ore into a rotary kiln having a reduction region and an oxidation region;

reducing said ore containing titanium and iron in said reduction region by heating said ore to a temperature in the range of from about 700 degrees C. to about 1100 degrees C. in the presence of a reducing agent such that the iron (III) present in the ore is substantially reduced to iron (II) and some metallic iron and a reduction flue gas is produced;

recovering at least a portion of said reduction flue gas from said reduction region of said rotary kiln;

introducing said recovered reduction flue gas into said oxidation region of said rotary kiln in such a manner that said reduction flue gas passes countercurrently to said reduced ore within said rotary kiln to cool said reduced ore by heat exchange and oxidize said reduced ore to convert metallic iron to iron (II) without the formation of significant amounts of iron (III);

withdrawing the oxidized ore from the rotary kiln;

leaching said oxidized ore with a hydrochloric acid solution to substantially remove the iron (II) and any remaining iron (III) present in the ore; and

calcining the acid leached ore to produce synthetic rutile, the thermal efficiency of said rotary kiln having been increased by having passed said reduction flue gas countercurrently to said reduced ore in said oxidation region of said rotary kiln.

4,199,553

GAS PURIFICATION PROCESS

Tatsuya Kawada, No. 4613-3, Kaminagaya-cho Kohnan-Ku, Yokohama-shi, Kanagawa-Ken, and Hiroshi Uchida, No. 28-70, 3-chome Minamisenju, Tokyo, both of Japan

Filed Apr. 18, 1979, Ser. No. 31,208

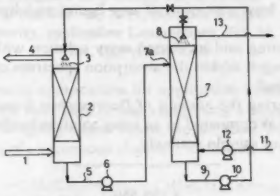
Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—226 **6 Claims**

1. A process for purifying a gas containing hydrogen sulfide and/or hydrogen cyanide which comprises

contacting a gas containing hydrogen sulfide and/or hydro-

gen cyanide with an absorbing solution containing at least one of naphthols or their salt(s) having a nitroso group at α-position or β-position and also at least one acidic group in the molecule thereof and also having a standard redox potential in the range of 0.4 V or higher but lower than 0.7 V, to cause said absorbing solution to absorb the hydrogen sulfide and/or the hydrogen cyanide contained in said gas, and thereafter



contacting air or oxygen with the resulting absorbing solution in a gas-liquid contact manner, to thereby convert hydrogen sulfide mainly into thiosulfuric acid and hydrogen cyanide mainly into thiocyanic acid to remove hydrogen sulfide and/or hydrogen cyanide, and at the same time regenerate the resulting absorbing solution.

4,199,554

METHOD OF AND APPARATUS FOR REMOVING NITROGEN OXIDES FROM THE GASES CONTAINING NITROGEN OXIDES

Tadashi Araki; Hatsuo Seito; Masayuki Funabashi; Ritaro Saito, all of Iwaki, and Koji Seguchi, Tokyo, all of Japan, assignors to Kureha Kagaki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1977, Ser. No. 866,042

Claims priority, application Japan, Jan. 21, 1977, 52-5522; Mar. 31, 1977, 52-36735

Int. Cl.² B01D *53/00*

U.S. Cl. 423—239 **24 Claims**

1. A method for the conversion of nitrogen oxide to ammonia in the presence of a catalyst to facilitate said conversion in the catalyst system while minimizing deposition of ammonium nitrate deposition on said catalyst which comprises passing said nitrogen oxides through a system containing said catalyst at a temperature of from 100° to 230° C., and intermittently introducing into said system a sufficient amount of a substance capable of decomposing ammonium nitrate formed in said system, whereby the deposition of ammonium nitrate on said catalyst is minimized.

4,199,555

CATALYST FOR REDUCING NITROGEN OXIDES

Takuji Itoh, Sayama; Satoshi Sakurada, Omiya, and Nobuaki Tagaya, Kawagoe, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 704,777, Jul. 13, 1976, Pat. No. 4,124,536. This application Aug. 23, 1978, Ser. No. 936,177

Claims priority, application Japan, Jul. 17, 1975, 50-87151

Int. Cl.² B01D *53/34*

U.S. Cl. 423—239 **6 Claims**

1. A process for the removal of nitrogen oxides from an exhaust gas containing from 0.001 to 0.005% nitrogen oxides, from 0.01 to 0.3% sulfur oxides and from 3 to 10% oxygen which comprises contacting said exhaust gas with ammonia at a temperature varying from 200° to 500° C. with a catalyst comprising a metal component contained on a silica-alumina or a silica-alumina-containing carrier which contains 5 to 50% by weight of silica and which possesses the following properties:

(1) a specific surface area of more than about 300 m^2 per gram;

(2) a volume of pores having a diameter ranging from 0 to 600 Angstroms less than about 80% of the total volume of pores;

(3) a volume of pores having a diameter ranging from 150 to 600 Angstroms more than about 30% of the volume of pores having a diameter ranging from 0 to 600 Angstroms; and

(4) a bulk density less than about 0.5 grams per milliliter.

4,199,556

METHOD FOR PRODUCING ZEOLITES

Charles J. Plank, Woodbury; Edward J. Rosinski, Pedricktown, both of N.J., and Mae K. Rubin, Bala Cynwyd, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 841,622, Oct. 13, 1977, which is a continuation-in-part of Ser. No. 650,481, Jan. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 424,481, Dec. 13, 1973, abandoned. This application Mar. 26, 1979, Ser. No. 23,856

Int. Cl.² C01B *33/28*

U.S. Cl. 423—329 **11 Claims**

1. In a method for synthesizing a crystalline aluminosilicate ZSM-11 zeolite from a reaction mixture comprising water, sources of silicate, alumina and alkali metal, the improvement whereby the zeolite is synthesized in a reaction mixture consisting essentially of said sources and a member selected from the group consisting (1) ZSM-11 seeds, (2) mixtures of ZSM-11 seeds with alcohol, (3) mixtures of ZSM-11 seeds with alcohol and ammonium hydroxide, and (4) mixtures of ZSM-11 seeds with ammonium hydroxide to yield a zeolite ZSM-11 product containing no more than about 0.2% by weight of organic nitrogen.

4,199,557

PROCESS AND APPARATUS FOR INTRODUCING AND MIXING A LIQUID IN AN ESSENTIALLY LIQUID MEDIUM

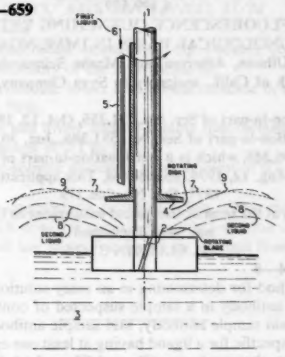
Michel Barloy, Rouen, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 555,931, Mar. 6, 1975, abandoned. This application Dec. 1, 1976, Ser. No. 746,419

Claims priority, application France, Mar. 13, 1974, 74 08520

Int. Cl.² B01D *12/00*

U.S. Cl. 423—659 **6 Claims**



1. A process for introducing and mixing a first liquid with a second liquid wherein the joinder of the first and second liquid results in an exothermic reaction or formation of a precipitate, and in which the second liquid is present as a body of liquid confined within an enclosure comprising flowing the first liquid downwardly in a linear stream towards the body of the second liquid, rotating a disc at high speed in a substantially horizontal plane in the path of the downwardly flowing stream of the first liquid whereby the stream of the first liquid is intercepted by the rotary disc and thrown centrifugally laterally outwardly as droplets from the periphery of the disc,

engaging a portion of the body of liquid with a rotary agitator means for displacement of a fraction of the liquid from the body of liquid in a upwardly direction above the surface of the body of liquid where it spreads outwardly as a sheet of droplets which falls back into the body of liquid along a circular path and which intersects with the droplets from the disc whereby a mixture of the two liquids is made at the intersection above the body of liquid.

4,199,558

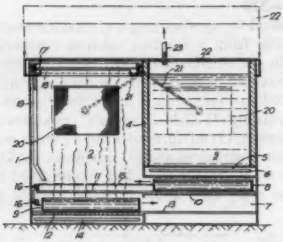
TISSUE PROCESSING METHOD

Kenneth J. Henderson, Crowthorne, England, assignor to Shandon Southern Products Limited, Cheshire, England

Division of Ser. No. 691,585, Apr. 7, 1976, Pat. No. 4,099,483. This application Apr. 3, 1978, Ser. No. 892,769

Int. Cl.[2] G01N *1/30, 33/16*

U.S. Cl. 424—3 **4 Claims**



1. A method of processing a tissue specimen, comprising the steps of suspending the specimen in condensing vapours of a volatile dehydrating agent, condensing the vapours on the specimen, and permitting the condensed vapours of the dehydrating agent to penetrate throughout the specimen and to be absorbed thereby until the moisture therein has been completely displaced.

4,199,559

FLUORESCENCE QUENCHING WITH IMMUNOLOGICAL PAIRS IN IMMUNOASSAYS

Edwin F. Ullman, Atherton, and Moshe Schwarzberg, Sunnyvale, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 731,255, Oct. 12, 1976, which is a continuation-in-part of Ser. No. 591,386, Jun. 30, 1975, Pat. No. 3,996,345, which is a continuation-in-part of Ser. No. 497,167, Aug. 12, 1974, abandoned. This application Feb. 7, 1977, Ser. No. 766,279

The portion of the term of this patent subsequent to Dec. 7, 1993, has been disclaimed.

Int. Cl.[2] G01N *33/16*

U.S. Cl. 424—8 **26 Claims**

1. A method for determining in an assay solution, the presence of an antibody in a sample suspected of containing said antibody, said sample antibody, said sample antibody referred to as being specific for a ligand having at least one epitopic site, wherein two chromophores, Ch_1 and Ch_2, which form a fluorescer-quencher pair are employed as reagents, whereby in said assay solution the amount of fluorescer brought within quenching distance of said quencher is affected by the presence of said sample antibody, which comprises:

(A) combining in an aqueous buffered medium to form an assay solution;

(1) said unknown;

(2) a source of Ch_1 as Ch_1 covalently bound to a first antibody composition capable of specific non-covalent binding to said ligand of said sample antibody;

(3) a source of Ch_2, as Ch_2 covalently bound to a second antibody composition capable of specific non-covalent binding to said ligand or as Ch_2 covalently or non-covalently bound to ligand analog, wherein ligand analog is a mono- or polyvalent radical, a substantial proportion of which defines a plurality of epitopic sites capable of specifically binding to the binding sites of said antibodies, with the proviso that when Ch_2 is present bound to said second antibody composition, ligand is added to said medium;

(B) incubating said assay solution for a sufficient time for at least a portion of said antibody compositions to combine with at least a portion of any ligand and ligand analog present;

(C) irradiating said incubated assay solution with light at a wave length within the absorption spectrum of said fluorescer; and

(D) measuring the amount of fluorescence from said assay solution as compared to an assay solution having a known amount of sample antibody.

4,199,560

SOLID ORAL PHARMACEUTICAL PRODUCT WITH INCREASED EFFICACY AND PREDETERMINED STEADY STATE OF SOLUBILITY

Laszlo Gyarmati; Istvan Racz; Peter Szentmiklosi, and Janos Plachy, all of Budapest, Hungary, assignors to Novex Talalmanyfejleszto Es Ertekesito Kulkereskedelmi Rt, Budapest, Hungary

Filed Oct. 19, 1978, Ser. No. 952,932

Claims priority, application Hungary, Feb. 24, 1978, 1247

Int. Cl.[2] A61K *9/22, 9/26, 9/54, 33/06*

U.S. Cl. 424—19 **3 Claims**

1. A solid oral pharmaceutical composition with protracted action in the form of tablets or capsules, having an internal phase consisting of solid granules and a solid external phase surrounding the said granules, wherein the granules are prepared from a powdered mixture of the active ingredients and of auxiliary agents granulated with an aqueous emulsion containing 2 to 10% w/w of stearic or palmitic acid, 0.5 to 5% w/w of sodium carboxymethyl cellulose and 1 to 7% w/w of two different non-toxic emulsifiers imparting a HLB-value of 8 to 12, and the said granules contain 10 to 90% w/w of one or more pharmaceutically active compound including at least 5% w/w of a basic bismuth salt insoluble in water in neutral medium, 5 to 20% w/w of a non-toxic gel-forming organic substance selected from the group consisting of sodium carboxymethyl cellulose, sodium alginate and tragacanth and 5 to 7% of solid residue of the said granulating emulsion, and the said solid external phase contains an amphoteric gel-forming substance selected from the group consisting of tragacanth, pectin and sodium carboxymethyl cellulose, in an amount of 1 to 50% of the total weight of the composition, and usual pharmaceutical excipients.

4,199,561

COATED NUTRIENTS AND MEDICAMENTS FOR VETERINARY USE

Harold H. Roth, Bay City; Peter W. Owen, and Thomas T. Chiu, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 26, 1979, Ser. No. 15,037

Int. Cl.[2] A61K *31/74, 9/32*

U.S. Cl. 424—32 **14 Claims**

1. A nutrient or therapeutic orally administered composition for ruminant animals comprising the composition of a nutrient or therapeutic material and coated thereon an hydroxyethyl imidazoline modified styrene-acrylonitrile polymer composition containing from about 15 to about 35 weight percent polymerized acrylonitrile, from about 85 to about 65 weight percent styrene, having a molecular weight of from about 60,000 to about 200,000, which polymer contains from 14 to 23 mole percent hydroxyethyl imidazoline modification, said combination being of such form that the material is thereby rendered resistant to attack and breakdown within the rumen

of the animal but remains susceptible to breakdown and digestion within the abomasum or small intestine of the animal.

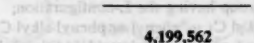
4,199,562

SEQUENCED SURFACTANT OLIGOMERS, PROCESS FOR PREPARING THE SAME AND COMPOSITIONS CONTAINING THE SAME

Guy Vanlerberghe, Claye-Souilly, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

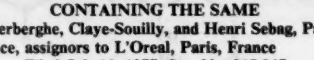
Filed Jul. 14, 1977, Ser. No. 815,847
Claims priority, applicatien Luxembourg, Jul. 16, 1976, 75406
Int. Cl.[2] A61K *7/00*
U.S. Cl. 424—47 **55 Claims**

1. A cosmetic composition for application to and for use in the care of the skin, nails or hair comprising a cosmetic carrier and 0.1–80 weight percent based on the total weight of the composition of a sequenced oligomer surfactant of the formula:

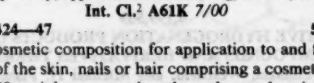


wherein:

$-C_2H_3(CH_2B)O-$ represents the two isomers:



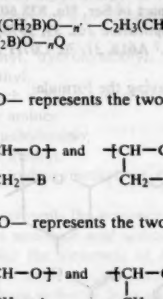
$-C_2H_3(CH_2A)O-$ represents the two isomers:



one of P and Q represents hydrogen and the other represents linear or branched alkyl having from 1–20 carbon atoms;

A represents $R-CH_2-$ or $R'-O-$, wherein R represents linear alkyl having from 4–16 carbon atoms and R' represents linear or branched alkyl having from 4–20 carbon atoms;

B represents a member selected from:



wherein

R_1 and R_2 each independently represent alkyl or hydroxyalkyl, having 1–3 carbon atoms or R_1 and R_2 together with the adjacent nitrogen atom form a heterocycle selected from piperidino or morpholino,

R_3 represents methyl or ethyl,

R_4 represents alkyl, hydroxyalkyl or dihydroxyalkyl, wherein the alkyl has 1–3 carbon atoms,

$Z^{\ominus}$ is an anion selected from $HSO_3^{\ominus}$, $CH_3SO_3^{\ominus}$, $CH_3SO_4^{\ominus}$ and $CH_3-C_6H_4-SO_3^{\ominus}$,

$R_1R_2N^{\oplus}HV$ and $R_1R_2N-O^{\oplus}HV^{\ominus}$ represent a salt of an amine or amine oxide wherein R_1 and R_2 have the meanings given above, and

a represents 0 or 1;

m represents a whole or decimal number from 2 to 10; and

n and n' represent a whole or decimal number from 2 to 25, with one of n and n' capable of being 0.

4,199,563

DENTAL TREATMENT AGENTS AND THEIR MEDICINAL USE

Hans R. Mühlemann, Zurich, Switzerland, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,194
Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720894; Jan. 20, 1978, 2802489
Int. Cl.[2] A61K *7/16*
U.S. Cl. 424—49 **8 Claims**

1. In a process for covering and sealing a dentine injury, the improvement which comprises the one-step process of contacting the exposed regions of a tooth having said dentine injury with an effective amount of a cerium salt selected from the group consisting of $CeCl_3$, $Ce(OOCCH)_3$, $Ce(SO_4)_2$, cerium acetylacetone, $Ce(NH_4)SO_4$ and $Ce(NO_2)_4$ and mixtures thereof in a solution strength between 0.1 and 30% wt./vol. dabbing solution, jelly or toothpaste.

4,199,564

FILM-FORMING ALCOHOLIC MICROBICIDAL TEAT DIP AND METHOD OF USE THEREOF

Jules Silver, North Franklin, and Thomas G. Borrows, East Hampton, both of Conn., assignors to Masti-Kure Products Company, Inc., Norwich, Conn.

Filed Sep. 22, 1978, Ser. No. 944,863
Int. Cl.[2] A61K *31/79, 31/045, 31/74*
U.S. Cl. 424—80 **32 Claims**

1. An antimicrobial animal teat dip tincture composition consisting essentially of the ingredients of:

(a) a water-soluble lower alkanol microbicide in an amount of 15 to 70%;

(b) a water and lower alkanol-soluble film-forming polymer in an amount of 0.1 to 15%;

(c) a water-soluble emollient in an amount of 0.1 to 10%;

(d) water

wherein the composition provides a fast acting microbicidal teat dip which does not cause substantial irritation of the teats with repeated use thereof and may be washed from the teats with water.

4,199,565

LIPOSOME PARTICLE CONTAINING VIRAL OR BACTERIAL ANTIGENIC SUBUNIT

William W. Fullerton, King of Prussia, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 26, 1979, Ser. No. 24,144
Int. Cl.[2] A61K *39/12, 39/02, 39/18*
U.S. Cl. 424—89 **5 Claims**

1. A particle comprising a liposome containing a fatty acid amine of from 12 to 20 carbon atoms as a positively charged amino-containing surfactant reacted with a viral or bacterial subunit antigen.

4,199,566

ANTIBACTERIAL COMPOSITION FOR MEDICAL USE

Isamu Saikawa; Takashi Yasuda; Masaru Tai; Yutaka Takashita, all of Toyama; Hiroshi Sakai, Taksoka; Michiko Mae, Toyama; Masahiro Takahata, Imizu, and Susumu Mitsuhashi, Musashino, all of Japan, assignors to Toyama Chemical Company, Limited, Tokyo, Japan

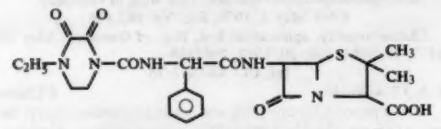
Filed Jun. 6, 1978, Ser. No. 913,105

Claims priority, application Japan, Jun. 8, 1977, 52-66707

Int. Cl.[2] A61K *35/00*

U.S. Cl. 424—114 **7 Claims**

1. An antibacterial composition for administration to a host animal, comprising: as active ingredients 6-[D(−)-α-(4-ethyl-2,3-dioxo-1-piperazinylcarbonylamino)phenylacetamido]-penicillanic acid represented by the formula:



or a pharmaceutically acceptable salt thereof and a β-lactamase-inhibiting penicillin selected from the group consisting of Cloxacillin, Dicloxacillin, Oxacillin, Methicillin, Flucloxacillin and a pharmaceutically acceptable salt thereof, said β-lactamase-inhibiting penicillin being mixed with said penicillanic acid in a ratio of 0.5 to 1.5.

4,199,567

METHOD FOR IMPARTING FREEZE STABILITY TO CHLORHEXIDINE-CONTAINING MEDICAMENTS

Billy F. Rankin, Rockville, Md., assignor to Burton, Parsons & Company, Inc., Washington, D.C.

Filed Jan. 2, 1979, Ser. No. 566

Int. Cl.[2] A61K *31/00, 31/08, 31/155, 47/00*

U.S. Cl. 424—173 **4 Claims**

1. A method for preventing the precipitation of chlorhexidine gluconate from a chloride ion-containing aqueous solution thereof upon exposure to freezing which comprises adding to the solution a polyoxyethylene fatty acid ester having an HLB number greater than 11 in a concentration greater than about 0.05% and less than about 0.1% but at least 10 times that of the chlorhexidine gluconate.

4,199,568

TETRAPEPTIDE AMIDES

Michael J. Rance, Hessle; Balraj K. Handa, Wawne, and Barry A. Morgan, Hessle, all of England, assignors to Reckitt & Colman Products Limited, London, England

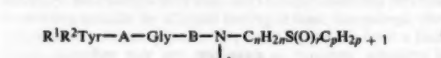
Filed Sep. 13, 1978, Ser. No. 941,757

Claims priority, application United Kingdom, Sep. 29, 1977, 40476/77

Int. Cl.[2] A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **23 Claims**

1. A compound of the formula:



(I)

wherein

R^1 is hydrogen, alkyl C_{1-4}, alkenyl C_{3-5}, propargyl, cycloalkylmethyl C_{4-8}, or phenylalkyl C_{1-3};

R^2 is hydrogen or alkyl C_{1-4};

A is a D-serine or D-threonine residue both optionally substituted on the β-OH by alkyl C_{1-4}, or a D-methionine, D-methionine sulphoxide or D-methionine sulphone residue or the group —NH—CR^4H—CO— (where R^4 is alkyl C_{1-5}) the group having the D-configuration;

B is the group —NR^6—CHR^8—CO— (where R^6 is hydrogen or alkyl C_{1-4} and R^8 is CH_2Ar where Ar is phenyl optionally substituted by chlorine, methyl, hydroxy or methoxy) the group having the L-configuration;

R^3 is hydrogen, alkyl C_{1-10}, phenyl or phenyl alkyl C_{1-6}; n is 2-5; p is 1-5; r is 1 or 2; and their acid addition salts.

4,199,569

SELECTIVE HYDROGENATION PRODUCTS OF C-076 COMPOUNDS AND DERIVATIVES THEREOF

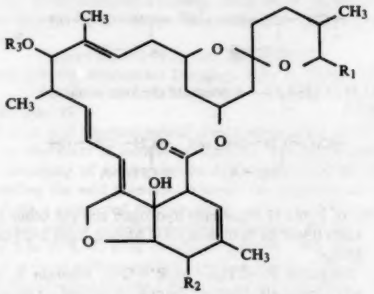
John C. Chabala, Westfield, and Michael H. Fisher, Bridgewater, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 838,603, Oct. 3, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 928,111

Int. Cl.[2] A61K *31/70*; C07H *17/08*

U.S. Cl. 424—180 **20 Claims**

1. A compound having the formula:



wherein

R_1 is iso-propyl or sec-butyl;

R_2 is methoxy, hydroxy or loweralkanoyloxy; and

R_3 is hydrogen; loweralkanoyl; α-L-oleandrosyl; 4′-loweralkanoyl-α-L-oleandrosyl; 4′-(α-L-oleandrosyl)-α-L-oleandrosyl, 4″-loweralkanoyl-4′-(α-L-oleandrosyl)-α-L-oleandrosyl.

15. A method for treating for parasites which comprises treating the animal or area infected with parasites with an effective amount of one or more compounds of claim 1.

18. A composition for the treatment of parasitic infections which comprises an inert carrier and one or more compounds of claim 1.

4,199,570

1-N-HETERO CONTAINING AMINOGLYCOSIDE DERIVATIVES

Kikuo Igarashi, Itami, and Junji Irisawa, Nishinomiya, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

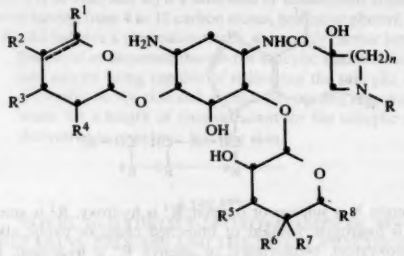
Filed Aug. 17, 1978, Ser. No. 934,595

Claims priority, application Japan, Sep. 19, 1977, 52-112840; Sep. 22, 1977, 52-114176

Int. Cl.[2] A61K *31/71*; C07H *15/22*

U.S. Cl. 424—180 **17 Claims**

1. A compound selected from the group consisting of a novel aminoglycoside derivative represented by the formula:



wherein

R is hydrogen, lower alkyl, aralkyl of 7 to 20 carbon atoms, or aralkoxycarbonyl of 8 to 20 carbon atoms;

n is an integer of 1 or 3;

R^1 is aminomethyl, hydroxymethyl, 1-aminoethyl, or 1-methylaminoethyl;

R^2, R^3 and R^6 each is hydrogen or hydroxy;

R^4 is hydroxy or amino;

R^5 is amino or methylamino;

R^7 is hydroxy or methyl;

R^8 is hydrogen, hydroxymethyl, or carbamoyloxymethyl; and

the dotted line represents the presence or absence of a double bond and a non-toxic acid addition salt thereof.

17. A method for the treatment of a bacterial infectious disease in a human or other species of animal which comprises administering to a host suffering from said bacterial infectious disease an antibacterially effective amount of a compound according to claim **1**.

4,199,571

SUBSTITUTED ANTHRACYCLINES, THEIR PREPARATION AND USE

Sergio Penco, Milan; Fausto Gozzi, Zola Predosa; Francesco Angelucci, Milan, and Federico Arcamone, Nerviano, all of Italy, assignors to Farmitalia Cario Erba S.p.A., Milan, Italy

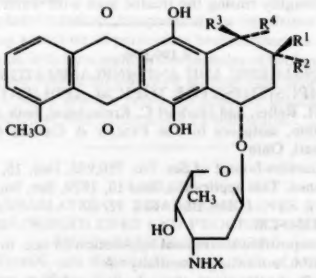
Filed Sep. 13, 1978, Ser. No. 941,847

Claims priority, application Italy, Sep. 5, 1978, 23151 A/78

Int. Cl.[2] **A61K** *31/71;* **C07H** *15/24*

U.S. Cl. 424—180 **14 Claims**

1. A compound of the formula:



wherein

(a) when R^1 is $-COCH_3$ or $-COCH_2OH$, R^2 is $-OH$, R^3 is $-OCH_3$ and R^4 is $-H$;

(b) when R^2 is $-COCH_3$ or $-COCH_2OH$; R^1 is $-OH$, R^3 is $-H$ and R^4 is $-OCH_3$; X is $-H$ or $-COCF_3$ and the hydrochlorides thereof.

12. A method of inhibiting the growth of transplanted lymphocytic leukemia P_{388} comprising intraferitoneally administering to a host afflicted therewith, a compound according to claim **1** in an amount sufficient to inhibit the growth thereof.

4,199,572

N-SUBSTITUTED AMINO GLYCOSIDE COMPOUNDS, THEIR PRODUCTION, AND THEIR USE AS MEDICAMENTS

Theo Schröder, and Karl-Georg Metzger, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

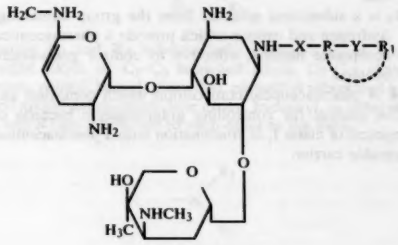
Filed Feb. 24, 1978, Ser. No. 881,263

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712160

Int. Cl.[2] **A61K** *31/71;* **C07H** *15/22*

U.S. Cl. 424—180 **28 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein X is $-CH_2-$ or $-CO-$, and

when R is not bonded to R_1, Y is 0 or S, R is methylene or di-, tri-, tetra-, penta- or hexa-methylene, unsubstituted or substituted by one or more alkyl radicals having from 1 to 4 C atoms; and

R_1 is alkyl having from 1 to 4 C atoms, unsubstituted or substituted by alkoxy having from 1 to 4 C atoms, cycloalkyl, cycloalkylmethyl or cycloalkylethyl having from 3 to 6 C atoms in the cycloalkyl moiety, phenyl, benzyl, furyl, furylmethyl, pyranyl, pyranylmethyl, thienyl, thienylmethyl, tetrahydrofuryl, tetrahydrofurylmethyl or pyridyl, or

when R is bonded to R_1,

$$-R-Y-R_1$$

together represent furyl, tetrahydrofuryl, chlorofuryl, bromofuryl, methylfuryl, pyranyl or morpholinyl.

22. A method of combating bacterial infection in a warm-blooded animal which comprises administering to the said animal an effective amount of an active compound according to claim **1** either alone or in admixture with a diluent or in the form of a medicament.

4,199,573

DIAZABORINES AND DRUG COMPOSITIONS

Hubert M. A. van Wersch, Kerkrade, Netherlands; Siegfried Herrling, Stolberg, and Heinrich Mückter, Aachen, both of Fed. Rep. of Germany, assignors to Grünenthal GmbH, Stolberg, Fed. Rep. of Germany

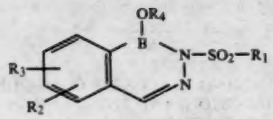
Continuation-in-part of Ser. No. 708,361, Jul. 26, 1976, Pat. No. 4,112,077. This application Jul. 27, 1978, Ser. No. 928,589

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811132

Int. Cl.[2] **A61K** *31/69;* **A61L** *13/00, 23/00;* **C07F** *5/02*

U.S. Cl. 424—185 **30 Claims**

1. A 1-hydroxy-benzo-2,3,1-diazaborine of the formula



in which

R_1 is a radical selected from the group consisting of acyclic alkyl and alkenyl radicals having 2 to 5 carbon atoms and such radicals substituted with from 1 to 3 halogen atoms, and mono-, di-, and tri-halogen methyl radicals,

R_2 and R_3 are the same or different substituents selected from the group consisting of C_1 and C_4 alkyl radicals and hydrogen, fluorine, chlorine and bromine atoms, with the proviso that only one of the substituents may be hydrogen, and

R_4 is a substituent selected from the group consisting of hydrogen and cations which provide a pharmaceutically acceptable material effective to control gram-negative bacteria.

24. A pharmaceutical composition which comprises an effective amount for controlling gram-negative bacteria of a compound of claim 1, in combination with a pharmaceutically acceptable carrier.

4,199,574

METHODS AND COMPOSITIONS FOR TREATING VIRAL INFECTIONS AND GUANINE ACYCLIC NUCLEOSIDES

Howard J. Schaeffer, Richmond, Va., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

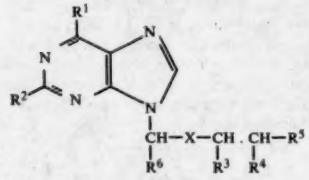
Continuation-in-part of Ser. No. 608,263, Aug. 27, 1975, abandoned. This application Mar. 1, 1976, Ser. No. 662,900

Claims priority, application United Kingdom, Sep. 2, 1974, 38278/74

Int. Cl.[2] **A61K** *31/52;* **C07D** *413/18*

U.S. Cl. 424—200 **81 Claims**

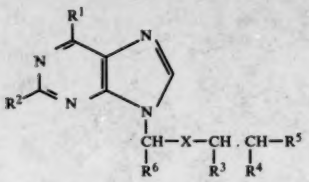
1. A substituted purine of formula (I)



(I)

wherein X is sulphur or oxygen; R^1 is hydroxy, R^2 is amino; R^3 is hydrogen, straight or branched chain or cyclic alkyl, hydroxyalkyl, benzyloxyalkyl or phenyl; R^4 is hydrogen, hydroxy, or lower alkyl; R^5 is hydrogen, hydroxy, amino, alkyl, hydroxyalkyl, benzoyloxy, benzoyloxyalkyl, benzyloxy, sulphamoyloxy, phosphate, carboxypropionyloxy, or acetoxy; R^6 is hydrogen, alkyl, hydroxyalkyl or a pharmaceutically acceptable salt thereof.

11. A pharmaceutical composition which comprises an effective non-toxic antiviral treatment amount of a substituted purine of the formula (I)



(I)

wherein X is sulphur or oxygen; R^1 is hydroxy, R^2 is amino; R^3 is hydrogen, straight or branched chain or cyclic alkyl, hydroxyalkyl, benzoylalkyl or phenyl; R^4 is hydrogen, hydroxy, or alkyl; R^5 is hydrogen, hydroxy, amino, alkyl, hydroxyalkyl, benzoyloxy, benzoyloxyalkyl, benzyloxy, sulphamoyloxy, phosphate, carboxypropionyloxy, or acetoxy; R^6 is hydrogen, alkyl, or hydroxyalkyl; or a pharmaceutically acceptable salt thereof; together with a pharmaceutically acceptable carrier therefor.

4,199,575

METHOD OF TREATING DERMATITIS VENENATA

Roland E. Gunther, R.D. 1, Box 282, New Berlin, N.Y. 13411

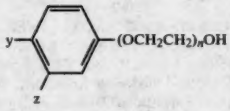
Continuation-in-part of Ser. No. 890,527, Mar. 27, 1978, abandoned. This application May 14, 1979, Ser. No. 38,409

Int. Cl.[2] **A61K** *31/09, 31/66*

U.S. Cl. 424—217 **10 Claims**

1. A method of treating Dermatitis Venenata on the skin of a patient, resulting from contact with Urushiols produced by plants of the family Anacardiaceae, which method comprises:

A. applying to the affected area of said skin a therapeutically effective amount of a non-aqueous surfactant of the class of alkyl aryl polyglycol ethers having the formula:



where

$y = C_mH_{2m+1}$,

$z = C_mH_{2m+1}$ or H, m being 6–10 and the average value of n is 4–150, or the phosphate or sulfate esters thereof,

B. substantially physically removing said surfactant, and

C. thoroughly rinsing the treated area with water.

4,199,576

ANALGESIC AND ANTI-INFLAMMATORY COMPOSITIONS FOR TOPICAL APPLICATION

Herbert H. Reller, and Herbert C. Kretschmar, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

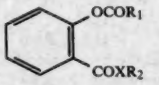
Continuation-in-part of Ser. No. 750,935, Dec. 15, 1976, abandoned. This application Jan. 10, 1979, Ser. No. 2,477

Int. Cl.[2] **A61K** *31/60*

U.S. Cl. 424—230 **30 Claims**

1. A composition for topical application to skin to alleviate inflammation, consisting essentially of:

(a) an effective amount of a salicylic acid derivative of the formula



where R_1 is an alkyl group having from 1 to 4 carbon atoms, X is O, NH or NR_2 and R_2 is a saturated or unsaturated aliphatic group having from 4 to 10 carbon atoms, benzyl or phenyl; and

(b) the balance a pharmaceutically acceptable carrier having dissolved or dispersed therein the salicylic acid derivative, said carrier being capable of delivering the salicylic acid derivative to the skin and capable of resisting removal by water for a length of time sufficient for the salicylic acid derivative to penetrate into the skin.

4,199,577

NOVEL 1α-HYDROXY-24-OXOVITAMIN D_3, ITS PREPARING PROCESS AND THE NOVEL PRECURSORS THEREOF

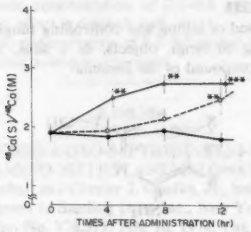
Toru Takeshita; Takao Niki; Hiroyuki Kawashima, and Kiyoshi Bannai, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sep. 1, 1978, Ser. No. 939,043

Claims priority, application Japan, Sep. 7, 1977, 52-106677

Int. Cl.² C07J 9/00

U.S. Cl. 424—236 **7 Claims**



1. 1α-Hydroxy-24-oxovitamin D_3.

4,199,578

COMPOSITION

Neil A. Stevenson, Loughborough, England, assignor to Fisons Limited, London, England

Filed Nov. 27, 1978, Ser. No. 963,814

Claims priority, application United Kingdom, Nov. 30, 1977, 49759/77

Int. Cl.² A61K 31/56

U.S. Cl. 424—240 **19 Claims**

1. A pharmaceutical composition for inhalation therapy, comprising a mixture of particulate beclomethasone dipropionate, at least 90% by weight of the particles of beclomethasone dipropionate having an effective particle size below 10 micrometers, and a powder carrier of effective particle size for administration of said composition by inhalation.

4,199,579

CARBAMATES OF 2-HALOERGOLINES AND 2-HALOERGOLENES AND PROCESS FOR THE PREPARATION THEREOF

Giorgio Ferrari, and Vittorio Vecchietti, both of Milan, Italy, assignors to Siphar S. A., Lugano, Switzerland

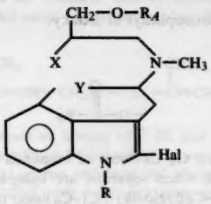
Continuation-in-part of Ser. No. 666,171, Mar. 12, 1976, abandoned. This application Jan. 30, 1978, Ser. No. 873,541

Claims priority, application Switzerland, Mar. 14, 1975, 3273/75

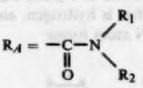
Int. Cl.² C07D 457/02; A61K 31/48

U.S. Cl. 424—248.55 **25 Claims**

1. A carbamate of 2-haloergoline or 2-haloergolene, having the formula:



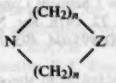
wherein R, R_A, x y, Hal are defined as follows:



(a)

wherein R_1 and R_2 independently represent (i) H, C_1–C_8 straight alkyls, or C_1–C_8 branched alkyls; C_3–C_{12} alicyclic groups; phenyl, benzyl, phenethyl, phenethyl substituted by an alkyl group, a dioxymethylene group, hydroxyl, or halogen; or R_1 and R_2 are connected to each other in the form:

to form (ii) a C_3–C_7 cyclic or bicyclic ring structure (iii) a heterocyclic ring structure of the formula:



wherein Z represents an oxygen atom or the group N—R_3, wherein R_3 is H, or alkyl, and n is 2;

(b) R is H, C_1–C_5 straight alkyl or C_1–C_5 branched alkyl;

(c) x y represents —CH_2—CH< or —CH=C<; and

(d) Hal is Cl, Br or I.

4,199,580

3-AMINO-2-OR-PROPOXY-TETRAHYDRONAPHTHYL OR INDANYL-SUBSTITUTED IMIDAZOLES AND USE

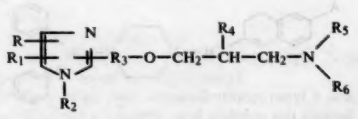
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 801,120, May 26, 1977, which is a continuation of Ser. No. 641,420, Dec. 17, 1975, Pat. No. 4,134,983, which is a continuation-in-part of Ser. No. 554,372, Mar. 3, 1975, abandoned. This application Jul. 14, 1978, Ser. No. 924,604

Int. Cl.² A61K 31/415, 31/535; C07D 233/64

U.S. Cl. 424—248.55 **22 Claims**

1. A compound having the formula

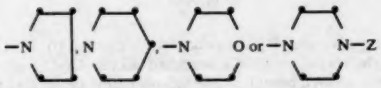


wherein

R and R_1 are independently selected from hydrogen, C_1–C_{10} linear or branched alkyl and substituted C_1–C_{10} linear or branched alkyl having 1–3 substituents selected from halo, hydroxy or C_1–C_4 alkoxy

R_2 is hydrogen, C_1–C_{10} linear or branched alkyl or C_3–C_6 alkenyl
R_3 is tetrahydronaphthyl or indanyl
R_4 is OH or

wherein R_b is C_1–C_6 linear or branched alkyl and
R_5 and R_6, (i) when separate, are independently selected from H, C_3–C_6 cycloalkyl, C_1–C_6 linear or branched alkyl and monosubstituted C_1–C_6 linear or branched alkyl wherein the substituent is phenyl or 3,4-dimethoxyphenyl provided that when one of R_5 and R_6 is said substituted alkyl group, the other is hydrogen, and (ii) when joined together with the N atom forms



wherein Z is H or C_1–C_{10} branched or linear alkyl and pharmacologically acceptable salts thereof.

22. Method of treating animals having hypertension which comprises administering an antihypertensive amount of compound of claim 1.

4,199,581

1,4-DITHIINO PYRAZINE TETRACARBONITRILES

Craig E. Mixan, and R. Garth Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 22, 1978, Ser. No. 944,669
Int. Cl.[2] C07D *495/04, 495/14;* A01N *9/12*
U.S. Cl. 424—250 **5 Claims**

1. A compound selected from the group consisting of 1,4-dithiino(2,3-b)pyrazine-2,3,6,7-tetracarbonitrile and 1,4-dithiino(2,3-b) (5,6-b')dipyrazine-2,3,7,8-tetracarbonitrile.

4. A method for controlling bacteria and fungi which comprises applying to said bacteria and fungi or their habitat an antimicrobially-effective amount of a compound of claim 1.

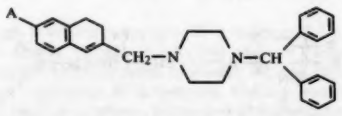
4,199,582

PIPERAZINE CONTAINING DIHYDRONAPHTHALENE DERIVATIVES AND COMPOSITIONS

Yoshikazu Oka, Kobe; Katsumi Itoh, and Minoru Hirata, both of Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

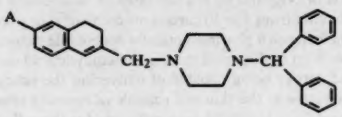
Filed Jul. 26, 1978, Ser. No. 928,156
Claims priority, application Japan, Aug. 2, 1977, 52/93089
Int. Cl.[2] C07D *295/12;* A61K *31/495, 31/535*
U.S. Cl. 424—250 **5 Claims**

1. A compound of the formula



wherein A is 1-pyrrolidinyl, piperidino or 1-homopiperidinyl or an acid addition salt thereof.

5. A pharmaceutical composition which comprises, as the active ingredient, a vasodilator effective amount of at least one compound of the formula



wherein A is 1-pyrrolidinyl, piperidino or 1-homopiperidinyl or an acid addition salt thereof together with a pharmaceutically acceptable carrier, excipient or diluent.

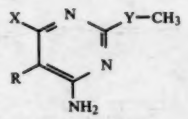
4,199,583

ANTIFUNGAL METHOD, FORMULATIONS AND COMPOUNDS

Malcolm W. Moon, and Diane M. Rohrstaff, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 607,096, Aug. 25, 1975, abandoned, which is a continuation of Ser. No. 54,562, Jul. 13, 1970, abandoned. This application Dec. 13, 1976, Ser. No. 749,982
Int. Cl.[2] A01N *9/22*
U.S. Cl. 424—251 **40 Claims**

1. The method of killing and controlling fungi which comprises applying to fungi, objects, or a situs, an antifungal amount of a compound of the formula:



wherein X is chlorine or fluorine, Y is sulfinyl, and R is hydrogen or methyl; or an acid addition salt thereof.

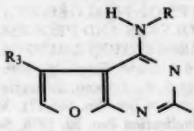
4,199,584

PESTICIDAL ACTIVE FURO[2,3-d] PYRIMIDINE DERIVATIVES, COMPOSITIONS CONTAINING THE SAME AND USE THEREOF

John M. Cox, Wokingham, and Margaret C. Shephard, Maidenhead, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 22, 1978, Ser. No. 908,456
Claims priority, application United Kingdom, May 27, 1977, 22477/77
Int. Cl.[2] A01N *9/22;* A61K *31/505;* C07D *491/04*
U.S. Cl. 424—251 **3 Claims**

1. A process for combating fungi, insects, acarina, and bacteria which infect or infest plants, seeds or animals which comprises applying to plants, seeds, or animals, or to the pests, or to their locus or habitat, or to the soil in which plants or seeds are growing or to be planted an effective amount of a furo [2,3-d] pyrimidine derivative having the formula:



wherein R is an alkoxy- or halo-substituted alkyl having 3 to 10 carbons, an alpha-methyl branched alkyl having 3–10 carbons, a benzyl or alpha-methyl benzyl group; R_2 is hydrogen, methyl, ethyl or propyl; R_3 is hydrogen, methyl or ethyl, or optical isomers thereof.

4,199,585

METHOD AND COMPOSITION FOR THE THERAPY OF CEREBRAL CIRCULATORY DISEASES

Davide Vegezzi, Via Cabione, 1, Massagno (Lugano), Switzerland

Continuation-in-part of Ser. No. 770,501, Feb. 22, 1977, abandoned. This application Mar. 22, 1978, Ser. No. 888,978

Int. Cl.[2] A61K *31/475*

U.S. Cl. 424—262 3 Claims

1. In the method for the treatment of cerebral circulatory diseases by oral administration of vincamine, the improvement consisting in administering vincamine in the form of a delayed-release formulation containing 50 to 75 mg of vincamine per unit dosage, in order to maintain in a hunam patient:

(a) a hematic concentration of 0.1–0.3 μg/ml, when the metabolic effect is desired; and

(b) a hematic concentration of 0.2–0.5 μg/ml, when a central vasodilating action is requested.

3. A pharmaceutical composition for the treatment of cerebral circulatory diseases in the form of a delayed-release formulation, with a vincamine content per unit dosage of 50 to 75 mg, together with suitable carriers, and formulated so that there will be maintained in a human patient:

(a) a hematic concentration of 0.1–0.3 μg/ml, when the metabolic effect is desired; and

(b) a hematic concentration of 0.2–0.5 μg/ml, when a central vasodilating action is requested.

4,199,586

DI-(LOWER-ALKYL) N-[1,2-DIHYDRO-2-OXO-5-(PYRIDINYL)-3-PYRIDINYL-]AMINO-METHYLANEMALONATES

George Y. Lesher, and Chester J. Opalka, Jr., both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 876,571, Feb. 10, 1978, Pat. No. 4,137,233, which is a division of Ser. No. 818,724, Jul. 25, 1977, Pat. No. 4,107,815, which is a continuation-in-part of Ser. No. 707,235, Jul. 21, 1976, Pat. No. 4,072,746, which is a continuation-in-part of Ser. No. 621,763, Oct. 14, 1975, Pat. No. 4,004,012. This application Aug. 28, 1978, Ser. No. 937,120

Int. Cl.[2] C07D *213/74;* A61K *31/44*

U.S. Cl. 424—263 6 Claims

1. Di-(lower-alkyl) N-(1,2-dihydro-2-oxo-5-PY-3-pyridinyl-)aminomethylenemalonate where PY is 4- or 3- or 2-pyridinyl or 4- or 3- or 2-pyridinyl having one or two lower-alkyl substituents, or pharmaceutically-acceptable acid-addition salt thereof.

3. A cardiotonic composition for increasing cardiac contractility, said composition comprising a pharmaceutically-acceptable inert carrier and, as the active component thereof, an effective amount of a cardiotonic di-(lower-alkyl) N-[1,2-dihydro-2-oxo-5-PY-3-pyridinyl]aminomethylenemalonate, where PY is 4- or 3- or 2-pyridinyl or 4- or 3- or 2-pyridinyl having one or two lower-alkyl substituents, or pharmaceutically-acceptable acid-addition salt thereof.

4,199,587

METHOD OF TREATING HYPERTENSION WITH POLYPRENYL ALCOHOL ESTER

Shizumasa Kijima, Tokyo; Isao Yamatsu, Kawaguchi; Yuichi Inai, Tokyo; Toshiji Igarashi, Tokorozawa, and Yoshikage Nakajima, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

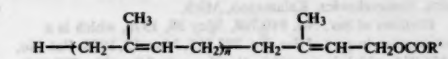
Continuation-in-part of Ser. No. 931,687, Aug. 7, 1978. This application Feb. 12, 1979, Ser. No. 11,234

Claims priority, application Japan, Aug. 10, 1977, 52-94965; Nov. 8, 1977, 52-133008

Int. Cl.[2] A61K *31/22, 31/235, 31/455*

U.S. Cl. 424—266 16 Claims

1. A method of treating hypertension which comprises orally or parenterally administering to a hypertensive subject requiring such treatment, a therapeutically effective amount of a hypertension treating composition comprising a pharmaceutical carrier and an effective anti-hypertensive amount of polyprenyl alcohol ester compound having the formula:



wherein n represents an integer of 7–10, and R′ is a saturated or unsaturated aliphatic hydrocarbon group of 1–17 carbon atoms; cyclohexyl group; unsubstituted phenyl group or phenyl group substituted with a halogen atom or a lower alkoxy group; (halogen atom-substituted phenoxy)-lower alkyl group; or pyridyl group.

4,199,588

6-PHENYL-4H-S-TRIAZOLO-[3,4C]-THIENO-[2,3E]-1,4-DIAZEPINES AND SALTS THEREOF

Karl-Heinz Weber, Gau-Algesheim; Adolf Bauer, Ingelheim am Rhein; Peter Danneberg, Ockenheim, and Franz J. Kuhn, Bingen, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

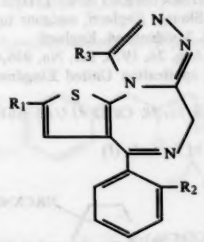
Continuation of Ser. No. 672,281, Mar. 31, 1976, abandoned, which is a continuation-in-part of Ser. No. 554,309, Feb. 28, 1975, abandoned. This application Nov. 30, 1977, Ser. No. 855,753

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1974, 2410030; Jul. 20, 1974, 2435041; Sep. 24, 1974, 2445430; Dec. 21, 1974, 2460776

Int. Cl.[2] A61K *31/55;* C07D *495/14*

U.S. Cl. 424—267 12 Claims

1. A compound of the formula



wherein

R_1 is bromine;

R_2 is chlorine or bromine; and

R_3 is tetrahydrofuranyl, tetrahydropyranyl, N-methylpiperidyl, or tetrahydrothiopyranyl;

or when R_3 is other than tetrahydrothiopyranyl a non-toxic, pharmacologically acceptable acid addition salt thereof.

12. The method of relieving anxiety, relieving tension, relaxing the muscles or suppressing convulsions in a warm-blooded animal, which comprises perorally, parenterally or rectally administering to said animal an effective anxiolytic, tension-relieving, muscle-relaxing or anticonvulsive amount of a compound of claim 1.

4,199,589
N-(2-AMINOCYCLOHEPTYL)ACYLANILIDES AND METHODS TO TREAT DEPRESSION

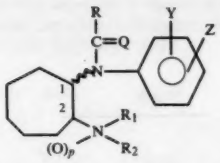
Jacob Szmuszkovicz, Kalamazoo, Mich.

Division of Ser. No. 910,748, May 30, 1978, which is a continuation-in-part of Ser. No. 885,515, Mar. 13, 1978, Pat. No. 4,156,014, which is a continuation-in-part of Ser. No. 779,593, Mar. 21, 1977, abandoned. This application Feb. 6, 1979, Ser. No. 9,981

Int. Cl.[2] A61K *31/40, 31/445;* C07D *207/12, 211/06*

U.S. Cl. 424—267 9 Claims

1. A process for treating depression which comprises administering to a depressed human a compound of the formula



(I)

wherein the wavy line (~) in the 1-position of the cycloheptyl ring indicates cis or trans configuration of the substituents in the 1- and 2-positions of the cycloheptyl ring;
p is zero or 1;
Q is oxygen or sulfur;
R is C_3 to C_6-cycloalkyl, vinyl, ethoxy, or methoxymethyl;
R_1 and R_2 are taken together with the nitrogen to which they are bonded, they complete an N-pyrrolidinyl or N-piperidinyl ring;
each of Y and Z is selected from the group consisting of hydrogen, a halogen having an atomic number of from 9 to 35, trifluoromethyl, C_1 to C_2-alkyl, and C_1 to C_2-alkyloxy and when Y is trifluoromethyl, Z is hydrogen; when Y is C_1 to C_2-alkyloxy and Z is hydrogen, the C_1 to C_2-alkyloxy is in the 3-position; when Y and Z are both halogens or C_1 to C_2-alkyloxy, they are present in the 3- and 4- or 3- and 5-positions, or a pharmacologically acceptable salt thereof, in an amount ranging from about 4 to about 400 mg. per dosage unit to alleviate the conditions of depression, in association with a pharmaceutical carrier.

4,199,590
PIPERIDINO UREAS AND THIOUREAS

Terence J. Ward, Slough, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

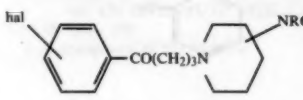
Filed Aug. 24, 1978, Ser. No. 936,441

Claims priority, application United Kingdom, Sep. 8, 1977, 37567/77

Int. Cl.[2] A61K *31/38;* C07D *417/12;* A61K *31/445*

U.S. Cl. 424—267 6 Claims

1. A compound of formula (I)



(I)

or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof, wherein hal represents halogen, R represents hydrogen or lower alkyl having 1 to 6 carbon atoms, R^2 represents a substituted or unsubstituted monocyclic heterocyclic group selected from thienyl, tetrahydrothienyl, furyl, tetrahydrofuryl, pyrrolyl, pyrrolidinyl, thiazolyl, oxazolyl and 1,2-oxazinyl, and the substituent is selected from the group consisting of lower alkyl of 1 to 6 carbon atoms and halogen and X represents oxygen or sulphur.

6. A pharmaceutical composition having action on the cardiovascular system comprising an effective amount of a compound of formula I as claimed in claim 1 or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof in association with a pharmaceutically acceptable carrier.

4,199,591
DIELS-ALDER ADDUCTS OF 3-ISOTHIAZOLONE 1-OXIDES AND 1,1-DIOXIDES

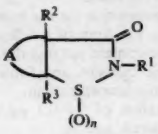
George A. Miller, Maple Glen, and Ernest D. Weiler, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 642,423, Dec. 19, 1975, abandoned. This application Feb. 12, 1979, Ser. No. 11,291

Int. Cl.[2] C07D *275/06;* A01N *9/12*

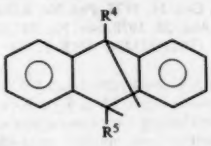
U.S. Cl. 424—270 9 Claims

1. A compound of the formula



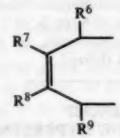
(I)

wherein
R^1 is hydrogen; (C_1–C_{18}) alkyl; or (C_1–C_{18}) alkyl substituted with up to three substituents selected from the group consisting of hydroxyl, halogen, (C_1–C_4) alkoxy, cyano and carboxy; (C_3–C_{12}) cycloalkyl, (C_7–C_{11}) aralkyl, or halogen, (C_1–C_4) alkyl or (C_1–C_4) alkoxy substituted aralkyl; (C_6–C_{10}) aryl or halogen, (C_1–C_4) alkyl or nitro substituted aryl;
R^2 and R^3 are independently hydrogen, halogen or (C_1–C_4) alkyl;
n is the integer 1 or 2; and A is a group of the formula



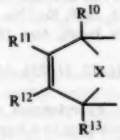
(II)

wherein
R^4 and R^5 are independently hydrogen, halogen, or (C_1–C_4) alkyl; or the group



(III)

wherein
R^6, R^7, R^8 and R^9 are independently hydrogen, halogen or (C_1–C_4) alkyl; or the group



(IV)

wherein

R^{10}, R^{11}, R^{12} and R^{13} are independently hydrogen, halogen or (C_1-C_4) alkyl;

X is oxygen, sulfur or $-(CY_2)_p-$

wherein

Y is hydrogen or halogen and p is 1 or 2.

7. A method for controlling phytopathogenic fungi which comprises applying to a plant, to plant seeds or to the plant habitat a fungicidally effective amount of a compound of claim 1.

4,199,592

ANTIINFLAMMATORY 4,5-DIARYL-2-NITROIMIDAZOLES

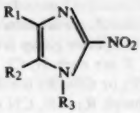
Saul C. Cherkofsky, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 937,715, Aug. 25, 1978, abandoned. This application Mar. 6, 1979, Ser. No. 18,023

Int. Cl.[2] **C07D** *233/91;* **A61K** *31/415*

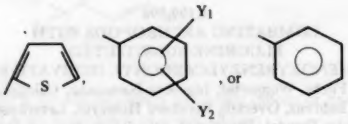
U.S. Cl. 424—273 R **27 Claims**

1. A compound of the formula

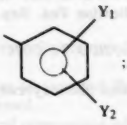


where

R_1 and R_2 independently are



with the proviso at least one of R_1 and R_2 must be

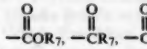


Y_1 is F, Cl, $N(CH_3)_2$ or C_1-C_4 alkoxy;

Y_2 is H, F, Cl;

R_3 is H,

2-tetrahydropyranyl, 2-tetrahydrofuranyl,



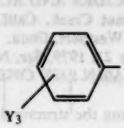
or $-SO_2Ar$;

R_5 is H or methyl;

R_6 is C_1-C_3 alkyl, benzyl, $-CH_2CH_2OCH_3$ or

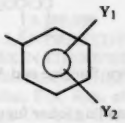
R_7 is C_1-C_4 alkyl or benzyl; and

Ar is



where

Y_3 is H, F, Cl, Br, C_1-C_4 alkyl, C_1-C_4 alkoxy or nitro; or a pharmaceutically suitable acid addition salt thereof where at least one of R_1 and R_2 is



where

Y_1 is $N(CH_3)_2$,

or a pharmaceutically suitable metal salt thereof where R_3 is H.

19. A method of treating arthritis in a mammal which comprises administering to the mammal an effective antiarthritic amount of a compound of claim 1.

4,199,593

COMBATING ARTHROPODS WITH 5-(3,4-METHYLENEDIOXYBENZYL)-DIOXOLANES AND SYNERGISTIC COMPOSITIONS THEREWITH

Volker Mues, Wuppertal; Wolfgang Behrenz, Overath; Gebhard Rauleder, Duesseldorf, and Helmut Waldmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

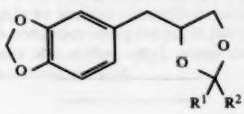
Filed Aug. 2, 1978, Ser. No. 930,282

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2736017

Int. Cl.[2] **A01N** *9/28;* **C07D** *317/44*

U.S. Cl. 424—282 **14 Claims**

1. 5-(3,4-Methylenedioxybenzyl)-dioxolanes of the formula



in which

R^1 and R^2 each independently is H, alkyl, or phenyl, or together are an alkylene radical.

8. An arthropodicidal composition comprising an arthropodicidally effective amount of a benzodioxole derivative according to claim 1 in admixture with a diluent.

9. A composition according to claim 8, wherein the diluent comprises a synergistically effective amount of at least one compound selected from (A) carbamates, (B) carboxylic acid esters, (C) phosphoric and phosphonic acid esters, (D) cycloalkanes and (E) halogenoalkanes.

12. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropododicidally effective amount of a compound according to claim 1.

4,199,594

N-HALOETHYLTHIO-FURANILIDES AND THEIR USE AS FUNGICIDES AND ACARICIDES

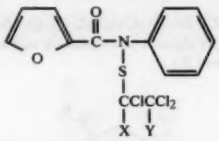
Hsiao-Ling Lam, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 21, 1979, Ser. No. 40,612

Int. Cl.[2] A01N *9/28;* **C07D** *307/68*

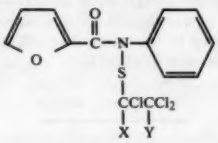
U.S. Cl. 424—285 **6 Claims**

1. A compound having the structural formula



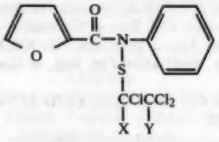
wherein X is chlorine or fluorine and Y is hydrogen or fluorine.

5. A method of controlling foliar fungi comprising applying thereto an effective amount of a compound having the formula



wherein X is chlorine or fluorine and Y is hydrogen or fluorine.

6. A method of controlling acarids comprising applying thereto an acaricidally effective amount of a compound having the formula



wherein X is chlorine or fluorine and Y is hydrogen or fluorine.

4,199,595

M-PHENOXYBENZYL AND α-CYANO-M-PHENOXYBENZYL ESTERS OF 2-HALOALKYL (OXY-, THIO-, SULFINYL-, OR SULFONYL)PHENYLALKANOIC ACIDS

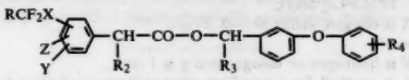
Gerald Berkelhammer, and Venkataraman Kameswaran, both of Princeton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 814,600, Jul. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 728,818, Oct. 1, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 890,568

Int. Cl.[2] A01N *9/12, 9/20;* **C07C** *69/76, 121/75*

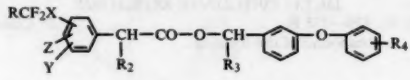
U.S. Cl. 424—304 **29 Claims**

1. A compound having the formula:



wherein RCF_2X—, Y and Z, are all meta or para to the carbon to which the alkanoic acid ester group is attached, and X is O, S, SO or SO_2; Y and Z are each H, Cl, F, Br, NO_2, CH_3 or OCH_3; R is H, F, CHF_2 or CF_3; R_2 is ethyl, n-propyl, isopropyl, isopropenyl or t-butyl; R_3 is H, CN or —C≡CH, and R_4 is H, F, Cl, CH_3 or OCH_3 or the optical isomers thereof.

17. A method for controlling insects and acarina comprising contacting the insects and acarina, their habitat, breeding grounds or feed, with an insecticidally or acaricidally effective amount of a compound of the formula:



wherein RCF_2X—, Y and Z, are all meta or para to the carbon to which the alkanoic acid ester group is attached, and X is O, S, SO or SO_2; Y and Z are each H, Cl, F, Br, NO_2, CH_3 or OCH_3; R is H, F, CHF_2 or CF_3; R_2 is ethyl, n-propyl, isopropyl, isopropenyl or t-butyl; R_3 is H, CN or —C≡CH, and R_4 is H, F, Cl, CH_3 or OCH_3 or the optical isomers thereof.

4,199,596

COMBATING ARTHROPODS WITH FLUORINE-SUBSTITUTED PHENOXYBENZYLCARBONYL DERIVATIVES

Rainer Fuchs, Wuppertal; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

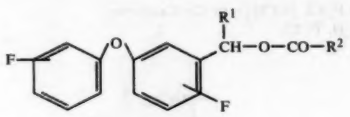
Filed Aug. 10, 1978, Ser. No. 932,597

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739854

Int. Cl.[2] A01N *9/20, 9/24;* **C07C** *69/74, 121/75*

U.S. Cl. 424—304 **9 Claims**

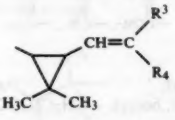
1. A fluorine-substituted phenoxybenzylcarbonyl derivative of the formula



in which

R^1 represents hydrogen, cyano or ethynyl and

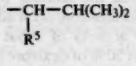
R^2 represents the radical



wherein

R^3 and R^4, which are identical, each represent chlorine, bromine or methyl, or

R^2 represents the radical



wherein

R^5 represents a phenyl ring which optionally carries one or more substituents each selected independently from halogen, alkyl, alkylthio and alkoxy each with 1–4 carbon atoms, nitro and methylenedioxy.

8. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

4,199,597

OMEGA-(4-POLYFLUORO-2-HYDROXY-2-PROPYL)-2,3,6-SUBSTITUTED-PHENOXY AND PHENYLTHIO)ALKANOIC ACIDS AND COMPOUNDS RELATED THERETO

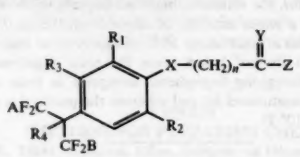
Bernard R. Neustadt, and Elijah H. Gold, both of West Orange, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed May 4, 1979, Ser. No. 35,963

Int. Cl.[2] A61K *31/235;* C07C *147/13, 101/72*

U.S. Cl. 424—308 15 Claims

1. A compound of the formula



(I)

wherein

A and B are independently hydrogen, chloro or fluoro

R_1 is halo, lower alkyl or lower alkoxy;

R_2 is halo, lower alkyl or lower alkoxy;

R_3 is hydrogen or lower alkyl;

R_4 is hydroxy, lower alkoxy, amino, or mono- or di-lower alkylamino;

n is 1–4;

X is oxygen or $S(O)_m$ wherein m is 0–2;

Y is oxygen; and

Z is hydroxy, lower alkoxy; and the pharmaceutically acceptable salts thereof.

14. A pharmaceutical composition adapted for the treatment of hypertension which comprises an effective amount of a compound according to claim 1 in admixture with a pharmaceutically acceptable carrier therefor.

15. A method for the treatment of hypertension which comprises administering to a hypertensive mammal an anti-hypertensive amount of a compound according to claim 1.

4,199,598

METHOD OF TREATING NORADRENALINE DYSFUNCTION OR FOR DOPAMINE-β-HYDROXYLASE INHIBITION

György Matolcsy; Piroska Bartók neé Berencsy, both of Budapest; Béla Kiss, Vecsés; Éva Pálosi, Budapest; Egon Kárpáti, Budapest, and László Szporny, Budapest, all of Hungary, assignors to Richter Gedeon Vegyészeti Gyár Rt., Budapest, Hungary

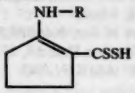
Continuation-in-part of Ser. No. 865,426, Dec. 29, 1977. This application Apr. 12, 1979, Ser. No. 29,475

Claims priority, application Hungary, Dec. 30, 1976, RI 609

Int. Cl.[2] A61K *31/185*

U.S. Cl. 424—315 10 Claims

1. A method of treating mammalian noradrenaline dysfunction and inhibiting dopamine-β-hydroxylase which comprises administering to a mammalian subject an effective does of a compound of the formula



wherein R is C_{2-4} alkenyl, C_{3-8} cycloalkyl, benzyl, unsubstituted C_{5-6} alkyl, C_{1-6} alkyl having a C_{1-4} alkoxy or hydroxy substituent, or C_{2-6} alkyl having a carboxy or amino substituent.

4,199,599

GLYCERYL-TRI-3,5,5-TRIMETHYLHEXANOATE PROTECTING THE SKIN THEREWITH AND COSMETIC COMPOSITIONS THEREFORE

Erich Klein, Holzminden, Fed. Rep. of Germany, assignor to Dragoco Gerberding & Co. GmbH, Holzminden, Fed. Rep. of Germany

Filed Feb. 3, 1978, Ser. No. 875,090

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728922

Int. Cl.[2] A61K *7/00, 7/40;* C07C *69/30*

U.S. Cl. 424—311 15 Claims

1. Glyceryl-tri-3,5,5-trimethylhexanoate.

2. A cosmetic composition which provides protection for the skin against harmful outside agents comprising 2–15% by weight of the compound of claim 1 and cosmetic adjuvants.

8. A cosmetic composition for protecting the skin, having an enhanced spreadability comprising a skin protecting amount of a skin protecting agent and cosmetic adjuvants, wherein at least a portion of said skin protecting agent comprises a spreadability enhancing amount of the compound of claim 1.

4,199,600

PRESERVATION OF AQUEOUS SYSTEMS WITH α-HALO-β-AMINOCROTONIC ACID ESTERS

Harold A. Brandman, Glen Ridge; Milton Manowitz, Wayne, and David L. Coffen, Glen Ridge, all of N.J., assignors to Givaudan Corporation, Clifton and Hoffmann-La Roche Inc., Nutley, both of, N.J.

Filed Aug. 17, 1978, Ser. No. 934,294

Int. Cl.[2] A61K *31/22*

U.S. Cl. 424—314 11 Claims

1. A method of inhibiting or preventing the growth of bacteria and fungi in an aqueous composition subject to spoilage thereby which comprises incorporating in said composition an effective amount of a methyl, ethyl, propyl or butyl ester of α-chloro-β-aminocrotonic acid.

4,199,601

DERIVATIVES OF TAURINE HAVING REINFORCED NEURO-MUSCULAR ACTIVITY

Jean P. Durlach, Paris, France, assignor to La Cooperation Pharmaceutique Francaise, Melun, France

Filed Mar. 20, 1978, Ser. No. 888,202

Claims priority, application France, Mar. 23, 1977, 77 08692

Int. Cl.[2] C07C *143/155;* A61K *31/195*

U.S. Cl. 424—315 5 Claims

1. Derivatives of taurine represented by the formula:

$$(CH_3—CO—NH—CH_2—CH_2—SO_3)_2^- Mg^+.$$

3. Pharmaceutal compositions containing as active ingredient a compound according to claim 1 associated with a suitable excipient for administration by the oral, parenteral or local route.

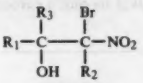
4,199,602

CONTROL OF MASTITIS AND COMPOSITIONS THEREFOR

Steven E. Lentsch, St. Paul, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 880,335, Feb. 23, 1978, abandoned. This application Dec. 18, 1978, Ser. No. 970,653
Int. Cl.[2] A61K *31/045, 31/195*
U.S. Cl. 424—343 20 Claims

1. An antibacterial composition, comprising:
(a) a nitroalkanol of the formula



wherein R_1 is selected from the group consisting of hydrogen, alkyl having 1 to 12 carbon atoms, phenyl alkyl of up to 10 carbon atoms, and, together with R_3, R_1 and R_3 can be the residue of a cycloalkyl ring having 5 to 7 carbon atoms, including the shared carbon atom; R_3, if not part of the said residue, is hydrogen; and R_2 is selected from the group consisting of hydrogen, methyl, ethyl, hydroxymethyl, and bromine;
(b) an aminocarboxylic acid or aminocarboxylate chelating agent having a calcium chelate stability constant of at least about 6; said chelating agent being combined with said nitroalkanol in an amount sufficient to significantly increase the topical bactericidal effect, in nonalkaline aqueous solution, of said nitroalkanol against *Pseudomonas aeruginosa* organisms.

4,199,603

PRODUCTION OF COATED FROZEN FISH OR OTHER COMESTIBLE

Daniel R. Sortwell, III, Rocky River, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Aug. 14, 1978, Ser. No. 933,180
Int. Cl.[2] A23L *1/176;* A23B *4/10, 7/16*
U.S. Cl. 426—92 12 Claims

1. A process for preparing coated comestibles of frozen portions of said comestibles which when cooked by microwave or oven cooking have a texture and appearance organoleptically similar or superior to that of conventional batter coated and breaded fat-fried such comestibles, comprising the steps of
applying to the surface of frozen portions of such comestibles, in sufficient amount to enrobe the same, a thin film of an edible oil having uniformly and stably dispersed therein a solid, edible, moisture absorbing substance;
said edible oil having a dilatometric profile such that it quickly becomes plastic in consistency at the temperature of the frozen comestible portions; and
uniformly applying to the coated frozen portions a crisp, relatively dry particulate adapted to provide, on microwave or oven cooking, said desired texture and appearance.

4,199,604

INTERMEDIATE-MOISTURE, READY-TO-USE, FROZEN NON DAIRY CREAMER

Marvin L. Kahn, Williamsville, and Kuttakandathil E. Eapen, Kenmore, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 871,995, Jan. 24, 1978, Pat. No. 4,154,863, and a continuation-in-part of Ser. No. 763,613, Jan. 28, 1977, Pat. No. 4,146,652. This application Jun. 20, 1978, Ser. No. 917,379
Int. Cl.[2] A23L *1/19*
U.S. Cl. 426—327 9 Claims

1. A microbiologically stable non-dairy creamer food product comprising about from 15 to 45% water, sugar in a ratio to water of about from 2–1:1, about from 2.5 to 30% fat, and minor but effective amounts of salt, emulsifier, stabilizer and flavoring, provided that the amount of fat is less than the amount of water, the solutes content is adequate to provide the product with a water activity of about from 0.8 to 0.9, said sugar comprises at least 50% of dextrose plus fructose, wherein the foregoing ingredients comprise at least one of fructose and unsaturated fat and the product is spoonable at 10° F., wherein the improvement comprises the addition of up to about 125 p.p.m. of a quinine salt.

4,199,605

INTERMEDIATE-MOISTURE FROZEN NON-DAIRY COFFEE CREAMER

Marvin L. Kahn, Williamsville, and Kuttikandathil E. Eapen, Kenmore, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 871,995, Jan. 24, 1978, Pat. No. 4,154,863, and Ser. No. 763,613, Jan. 28, 1977, Pat. No. 4,146,652. This application Jun. 30, 1978, Ser. No. 920,953
Int. Cl.[2] A23C *11/00*
U.S. Cl. 426—330.6 19 Claims

1. A microbiologically stable non-dairy creamer food product comprising about from 15 to 45% water, sugar in a ratio to water of about from 2–1:1, about from 2.5 to 30% fat, and minor but effective amounts of salt, emulsifier, stabilizer and flavoring provided that the amount of fat is less than the amount of water, the solutes content is adequate to provide the product with a water activity of about from 0.8 to 0.9, said sugar comprises at least about 50% of dextrose or fructose or a combination thereof based upon the total sugar content, wherein the foregoing ingredients comprise at least one of fructose and unsaturated fat and wherein the product is spoonable at about 10° F.

4,199,606

PROPIONIC ACID ON A CARRIER MATERIAL AS A PRESERVATIVE

Bobby J. Bland, P.O. Box 3891, Corpus Christi, Tex. 78404

Continuation-in-part of Ser. No. 835,663, Sep. 22, 1977, abandoned. This application Feb. 21, 1978, Ser. No. 879,605
Int. Cl.[2] A23B *9/00*
U.S. Cl. 426—331 20 Claims

1. A dry, free-flowing particulate composition useful as a preservative for a product consisting essentially of a raw or processed agricultural crop product which is subject to microbiological degradation, which is low in sugars and high in one or more of cellulose, starch or lignin, and which product contains moisture, said particulate composition comprising verxite in particulate form having absorbed thereon from about 0.1 to about 2.0 parts by weight of propionic acid in the liquid form per part by weight of said verxite, and wherein the particle size of said verxite is within the range of from 150 to 2000 microns.

4,199,607

PROCESS FOR CARBONATION OF AN AQUEOUS MEDIUM

John D. Sherman, Chappaqua, and Jay R. Ronald, Upper Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 742,062, Nov. 15, 1976, Pat. No. 4,123,390. This application Jul. 17, 1978, Ser. No. 925,201
Int. Cl.[2] A23L *2/00*
U.S. Cl. 426—477 1 Claim

1. Process for introducing carbon dioxide into an aqueous medium which comprises contacting said medium with a rigid porous agglomerated body comprising zeolite molecular sieve crystals having average diameters of from 0.5 to 15 microns and having pores large enough to adsorb carbon dioxide, said molecular sieve crystals being present in an amount of at least 6 grams and comprising at least 40 weight percent, in their activated state, of said body, said body having a piece density

of at least 0.5 g./cm.^{3}, an effective thickness value of greater than 0.20 cm., a total capillary pore volume of from 0.2 to 1.0 cc./gm. in the activated state, of which from 4 to 75 percent thereof is created by macropores having average diameters of from 2 to 100 microns, and at least 10 percent thereof being created by macropores having diameters less than 1 micron, said body containing carbon dioxide adsorbed in the zeolitic molecular sieve crystals thereof, whereby the carbon dioxide is adsorbed by water from the aqueous medium.

4,199,608

LOW CALORIE CONTAINING IMITATION DAIRY PRODUCTS

Cecilia Gilmore; Donald E. Miller, both of Strongsville, and Richard J. Zielinski, Middleburg Heights, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 855,878, Nov. 30, 1977, abandoned. This application Jul. 14, 1978, Ser. No. 924,701

Int. Cl.^{2} A23C *11/00, 23/00*

U.S. Cl. 426—570 **33 Claims**

1. A low-calorie imitation dairy product comprising a water-dispersible or soluble protein, stabilizing gum and lipid, in amounts effective to provide properties of conventional dairy products, wherein the total lipid content consists essentially of a plastic edible partial glycerol ester emulsifier of which a major constituent is diglyceride, present, based on the lipid weight, in an amount of about 38–48%, the triglyceride content being less than the mono- and diglyceride contents combined, the ratio of diglyceride to monoglyceride being about 5:1 to about 1.5:1.

4,199,609

METHOD FOR PREPARING CHEESE

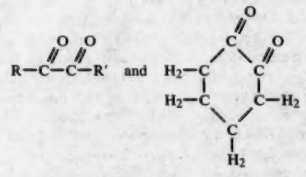
Fred L. Metz, Concord, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Dec. 19, 1977, Ser. No. 861,908

Int. Cl.^{2} A23C *19/02*

U.S. Cl. 426—582 **14 Claims**

1. In a process for preparing a cheese product wherein milk in the absence of any milk-acidifying bacteria culture is acidified with the aid of a chemical acidogen to a pH at which milk protein is coagulated to stable cheese curd which is then processed to the finished product, the improvement which comprises employing as the chemical acidogen, at least one aliphatic $C_{2\text{-}6}$ dione in combination with hydrogen peroxide, said $C_{2\text{-}6}$ dione having vicinal carbonyl groups and conforming to one of the structures:



wherein R and R' are each hydrogen or $C_{1\text{-}2}$ alkyl.

4,199,610

NON-HYGROSCOPIC DRY INSTANT BEVERAGE MIXES

Donald L. Hughes, Cincinnati; Jack A. Doty, Greenhills, and Charles B. Vinson, Forest Park, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 13, 1978, Ser. No. 941,873

Int. Cl.^{2} A23L *2/00*

U.S. Cl. 426—590 **16 Claims**

6. A process for preparing a dry stable, substantially non-hygroscopic, rapidly dissolving crystalline sugar-sweetened dry beverage mix comprising the steps of:

(a) pulverizing said crystalline sugar to a particle size of from about 1 to about 100 microns;

(b) forming a slurry by admixing a flavor base containing a flavorant and a phosphoric acid acidulent with said pulverized sugar in an amount such that said admixture has a flavor base:sugar ratio of about 0.01 to about 0.15 and wherein said slurry has a total solids content of from about 75 wt.% to about 95 wt. %;

(c) drying said slurry admixture to substantial dryness; and

(d) grinding the dried mixture to form discrete dry beverage mix particles.

4,199,611

CACAO BUTTER SUBSTITUTE

Yasuo Toyoshima; Tadasu Ito; Shouji Maruzeni; Nozomi Yasuda, and Kimio Terada, all of Tokyo, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Filed Aug. 30, 1978, Ser. No. 938,713

Int. Cl.^{2} A23D *5/00*

U.S. Cl. 426—607 **3 Claims**

1. A cacao butter substitute consisting essentially of a mixture of triglycerides of saturated and unsaturated fatty acids wherein the saturated fatty acids consist essentially of palmitic acid, stearic acid and arachidic acid with the proviso that the amount of arachidic acid moiety is from 4 to 15 molar %, the amount of palmitic acid moiety is from 10 to 65 molar % and the amount of stearic acid moiety is from 20 to 86 molar % based on the total saturated fatty acid moieties, wherein the unsaturated fatty acids consist essentially of oleic acid and linoleic acid with the proviso that the amount of linoleic acid moiety is less than 20 molar % based on the total unsaturated fatty acid moieties, and wherein the proportions of the triglycerides are as follows, based on the total triglycerides:

1 to 5 molar % of trisaturated triglycerides,

50 to 80 molar % of β-unsaturated-α, α'-disaturated triglycerides,

zero to less than 5 molar % of α or α'-unsaturated-disaturated triglycerides,

15 to 50 molar % of α or α'-saturated-diunsaturated triglycerides,

zero to less than 5 molar % of β-saturated-diunsaturated triglycerides, and

zero to less than 6 molar % of triunsaturated-triglycerides.

4,199,612

CORN POWDER PREPARATION

Restituto R. Fragas, 3027 Glenwood Pl., Southgate, Calif. 90280

Filed Oct. 11, 1977, Ser. No. 840,702

Int. Cl.^{2} A23L *1/195*

U.S. Cl. 426—622 **4 Claims**

1. A method of preparing corn powder consisting of the steps of

(a) picking corn at a sufficient time period of the normal growing cycle before being ripened and field dried so that it contains between 35 and 45 percent fluid by weight;

(b) removing the kernels from their associated cobs;

(c) heating said separated kernels at a temperature between 125° F. and 150° F. for between 2 and 2½ hours;

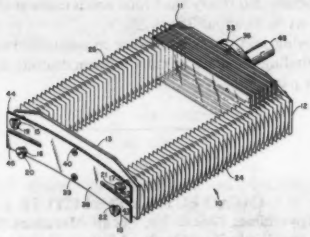
(d) subjecting said heated kernels to an airstream to separate flake-like coverings surrounding the kernels which form a residue, and blowing the residue therefrom; and

(e) grinding the kernels into a powder having a texture between that of coarse and fine corn powder.

4,199,613
STAINING METHOD BY CAPILLARY ACTION

Leighton C. Johnson, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 840,651, Oct. 11, 1977, Pat. No. 4,129,093.
This application May 8, 1978, Ser. No. 903,408
Int. Cl.[2] A01N 1/02
U.S. Cl. 427—2 3 Claims



1. A method for applying liquid to a plurality of individual, substantially flat objects which comprises:

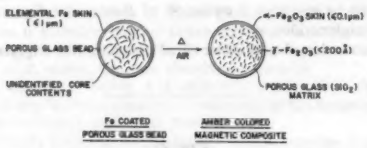
vertically aligning said substantially flat objects in substantially parallel face-to-face relation to each other, adjacent ones of said flat objects being separated from each other by a capillary gap; and

introducing a first treating liquid along at least one edge portion of the uppermost flat object, so that downward flow of said first treating liquid results in the first capillary gap between the first flat object to be filled and then the excess liquid passes to the next capillary gap therebelow and so on until all the capillary gaps between said objects are filled.

4,199,614
TRANSPARENT COLORED MAGNETIC MATERIALS AND ELECTROSTATOGRAPHIC PROCESS

Ronald F. Ziolo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1976, Ser. No. 710,538
Int. Cl.[2] B05D 1/04, 1/06; B05B 5/00
U.S. Cl. 430—111 4 Claims



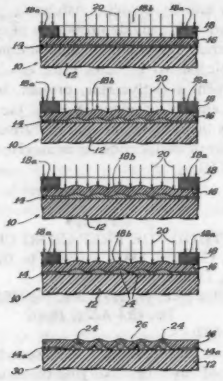
1. A magnetically-responsive composite particle having an average particle diameter of from between about 10 microns and about 850 microns, said particle comprising a porous silicaceous matrix impregnated with a magnetic or magnetically-attractable transition metal comprising a fine dispersion of ferrimagnetic γ-Fe_2O_3 throughout said silicaceous matrix, said composite particle having been heated in an ambient atmosphere for between about 2 minutes and about 120 minutes at a temperature of from between about 50° C. and about 700° C. whereby said composite particle is characterized as colored and transparent in the wavelength region of from about 5,000 to about 8,000 Angstroms.

3. An electrostatographic magnetic imaging process comprising the steps of providing an electrostatographic imaging member having a recording surface, forming an electrostatic latent image on said recording surface, and contacting said electrostatic latent image with a magnetically-responsive composite particle having an average particle diameter of from between about 10 microns and about 850 microns, said particle comprising a porous silicaceous matrix impregnated with a magnetic or magnetically-attractable transition metal, said composite particle having been heated in an ambient atmosphere for between about 2 minutes and about 120 minutes at a temperature of from between about 50° C. and about 700° C. whereby said composite particle is characterized as colored and transparent in the wavelength region of from about 5,000 to about 8,000 Angstroms, whereby said particle is attracted to and deposited on said recording surface in conformance with said electrostatic latent image.

4,199,615
DRY-PROCESS IMAGING FILM AND METHOD

Harvey H. Wacks, Southfield, and Donald J. Sarrach, Novi, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 507,049, Sep. 18, 1974, abandoned. This application Feb. 18, 1977, Ser. No. 770,076
Int. Cl.[2] B05D 3/06; G03C 5/04, 5/24
U.S. Cl. 427—43.1 6 Claims



1. An essentially instantaneous dry-process method of producing an image, comprising providing a dry-process imaging film consisting essentially of a substrate, a thin, continuous, non-particulate solid film of a dispersion imaging material on the substrate, and a thin, flexible continuous transparent film of a polymeric resin on the film of dispersion imaging material said dispersion imaging material comprising a metal or metal-like substance and being capable, upon application to the imaging film of a short pulse of high intensity radiant energy in an amount sufficient to increase the absorbed energy in the material above a certain threshold value, of changing to a substantially molten state in which the surface tension of the material acts to cause the continuous film of the dispersion imaging material where subject to said energy pulse to change to a discontinuous film comprising spaced globules and free space therebetween in the dispersion imaging material through which light can pass, said film of polymeric resin being capable, upon application to the imaging film of a short pulse of high intensity radiant energy in an amount sufficient to increase the absorbed energy of the dispersion imaging material above a certain threshold value, of softening and flowing into the free, light transmitting spaces between the spaced globules of dispersion imaging material while still providing a protective overlayer for the dispersion imaging material, applying a short pulse of high intensity radiant energy through an imaging mask having an image pattern including portions of higher transmissiveness and portions of lower transmissiveness for said energy pulse to the continuous film of dispersion imaging material through the film of polymeric resin in an amount sufficient to increase the absorbed energy in the dispersion

imaging material above a certain threshold value in areas thereof underlying the film of polymeric resin corresponding to said portions of higher transmissiveness of said pattern of the imaging mask to essentially instantaneously cause the dispersion imaging material in those areas to change to a discontinuous condition comprising spaced globules and free space through which light can pass and to cause at the same time the polymeric resin to soften and to flow into the free space between the spaced globules while maintaining a protective overlayer of the polymeric resin on the dispersion imaging material, and, following the application of the short pulse of high intensity radiant energy permitting the separate globules to become fixed in spaced apart relation and the polymeric resin to harden in the free spaces between the spaced globules and over the dispersion imaging material, to provide essentially instantaneously a stable, finished image in the imaging film corresponding to said image pattern of the imaging mask.

4,199,616

IONOGRAPHIC RECORDING OF X-RAY IMAGES

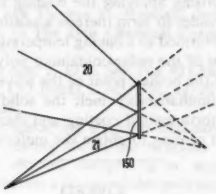
Gerd Goldmann Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 803,213, Jun. 3, 1977, Pat. No. 4,119,848. This application Jul. 28, 1978, Ser. No. 928,823

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1976, 2626068

Int. Cl.[2] B05D *3/06*

U.S. Cl. 427—53.1 **2 Claims**



1. A process for the production of a thermoplastic coating for use in an ionographic image recording device, said process being characterized in that a coating of photoresist (**12, 15**) is applied on a substrate (**10**), in that this coating of photoresist is exposed by means of two interfering coherent light beams, in that the coating of photoresist is then developed to form the corrugated structure on the surface of the photoresist coating, in that the electrode (**13**) in the form of a lamina is applied on the corrugated surface of the coating of photoresist and in that the thermoplastic coating (**14**) is then applied thereon.

4,199,617

COATED PHOSPHORS AND ARTICLES EMPLOYING SAME

Clarence D. Vanderpool, Towanda, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Division of Ser. No. 917,825, Jun. 22, 1978. This application Dec. 6, 1978, Ser. No. 966,980

Int. Cl.[2] B32B *5/16;* **B05D** *5/06, 5/12*

U.S. Cl. 427—64 **2 Claims**

1. Method for producing a composite article of manufacture comprising phosphor particles and a coating on the surface of the particles, the method comprising:

(a) forming an aqueous solution of polyvinyl alcohol, and at least one amino acid selected from the group consisting of aspartic acid and glutamic acid, an amount corresponding to from about 30 to 80 weight percent of the polyvinyl alcohol,

(b) forming a slurry of phosphor particles in the solution,

(c) maintaining the slurry while promoting polymerization of polyvinyl alcohol surrounding the particles, and

(d) separating the thus coated particles from the solution.

4,199,618

HIDDEN ENTRY SYSTEM

Ronald Golden, Mt. Prospect, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 2, 1975, Ser. No. 609,612

Int. Cl.[2] B41M *5/16, 5/18, 5/20*

U.S. Cl. 427—145 **18 Claims**

1. A method for the production and development of a hidden image on a receptor sheet, which method comprises:

providing a receptor sheet;

forming a hidden image on the surface of said sheet by contacting a predetermined, selected portion of said surface with a chemical desensitizing agent capable of preventing the formation of a visible image on said receptor sheet when said surface of said receptor sheet is contacted with a chromogenic composition and electron-acceptor material capable of forming a visible color upon contact with said chromogenic composition, thereby providing stored information in the form of a hidden, desensitized, latent image on said surface at the desensitized portion thereof;

thereafter developing said hidden image by contacting the surface of said receptor sheet adjacent said hidden image with a mark-forming composition comprising at least said chromogenic composition so as to convert said hidden image substantially entirely into a negative, visible image, said chromogenic composition reacting with said electron-acceptor material to provide a colored marking on said receptor sheet and thereby converting said hidden image into a negative, visible, image wherein said mark-forming composition and said desensitized portion of said surface combine to form said visible image wherein the background of said visible image is formed by said mark-forming composition and the foreground of said visible image is formed by said desensitized, selected portion.

4,199,619

PROCESS FOR PREPARING AN ACCEPTOR COATED SHEET FOR USE IN A PRESSURE SENSITIVE COPYING SYSTEM

Shinichi Oda, Nishinomiya; Hiroshi Tsuchiya, Hirakata; Takao Matsushita, Kobe, and Takio Kuroda, Amagasaki, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,765

Claims priority, application Japan, May 27, 1977, 52-62529

Int. Cl.[2] B41M *5/16, 5/22*

U.S. Cl. 427—150 **7 Claims**

1. A process for preparing an acceptor coated sheet used in a pressure sensitive copying system utilizing a color forming reaction on a base sheet between the color former in the form of the oily core material encapsulated in microcapsules and the

organic acceptor in an acceptor coating layer formed on said base sheet, the improvement which comprises said base sheet being coated with a composition comprising at least one organic acceptor and a carboxylic latex having an oil swellability smaller than 65% in terms of the swelling with said oily core material.

4,199,620

METHOD FOR PROVIDING MIRROR SURFACES WITH PROTECTIVE STRIPPABLE POLYMERIC FILM

Charlene C. Edwards, Powell, and Jack R. Day, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 27, 1979, Ser. No. 24,340

Int. Cl.[2] B65B *33/02*

U.S. Cl. 427—156 **5 Claims**

1. A method for forming on a diamond-machined metallic surface having a given reflectivity a dry, impermeable, transparent elastomeric film which can be formed on said surface and stripped intact therefrom without substantially altering said reflectivity, said method comprising:

applying to said surface as a coating a liquid composition comprising (a) 5 to 11% by weight of a completely polymerized and completely cured thermoplastic urethane elastomer characterized by an elongation of at least 400%; (b) 72 to 95% by weight tetrahydrofuran; and (c) 0 to 17% by weight of an alcohol selected from the group consisting of methyl, ethyl, and isopropyl alcohols, and evaporating said coating or dryness.

4,199,621

METHOD OF PRODUCING IRON OXIDE PHOTO MASKS

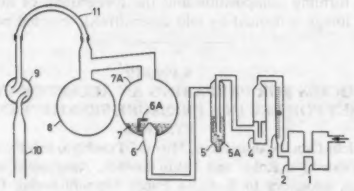
Theo J. A. Popma, and Maria G. J. Kamminga-Schrijnemakers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,171

Claims priority, application Netherlands, Jan. 27, 1977, 7700808

Int. Cl.[2] B05D *1/02, 3/02*

U.S. Cl. 427—160 **6 Claims**



1. A method of producing a photomask, transmissive to visible light and non-transmissive to ultraviolet light and consisting essentially of a thin coating of iron oxide on a transparent support, comprising heating a transparent support to a temperature between 180° and 250° C. and spraying said heated support with a solution of a hydrolyzable salt of trivalent iron in a polar organic solvent.

4,199,622

COATING COMPOSITIONS FOR USE IN COATING CAN INSIDES AND A METHOD FOR APPLYING THE SAME

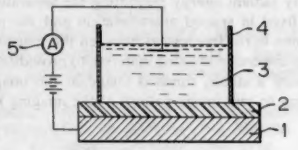
Jun Kokumai; Akira Otsuki, and Tadashi Ishibashi, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1976, Ser. No. 696,252

Claims priority, application Japan, Jun. 20, 1975, 50/74306; Nov. 20, 1975, 50/138697

Int. Cl.[2] B05D *7/22*

U.S. Cl. 427—239 **10 Claims**



1. A method for forming a uniform coating on metallic can insides from a coating composition which consists essentially of (1) a polar group-containing polyolefin prepared by graft copolymerizing a polyolefin with a carboxyl-containing unsaturated monomer in a grafting ratio of 0.01–6.0% by weight and (2) at least one hydrocarbon type solvent for the polyolefin, the polyolefin being dispersed in the solid particulate form in the solvent and the boiling point of the solvent being higher than the softening point of the polyolefin but not 50° C. higher than tha baking temperature of the coating of the polyolefin to be formed, comprising applying the coating composition to the metallic can insides to form thereon a coating thereof, heating the coating so formed to a baking temperature higher than the softening point of the polar-containing polyolefin but not 50° C. lower than the boiling point of the solvent to distil off the solvent and simultaneously melt the solid particles thereby forming a uniform melted coating and then cooling the thus formed melted coating to obtain the uniform coating.

4,199,623

PROCESS FOR SENSITIZING ARTICLES FOR METALLIZATION AND RESULTING ARTICLES

Francis J. Nuzzi, Freeport; Edward J. Leech, Oyster Bay; Richard W. Charm, Huntington Station, and Joseph Polichette, South Farmingdale, all of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation of Ser. No. 520,355, Nov. 1, 1974, abandoned, which is a continuation-in-part of Ser. No. 270,861, Jul. 11, 1972, and a continuation-in-part of Ser. No. 407,555, Oct. 18, 1973. This application May 13, 1977, Ser. No. 796,809

Int. Cl.[2] B05D *3/10*

U.S. Cl. 427—305 **45 Claims**

1. In the process for the electroless deposition of metal on a non-metallic surface, the improvement which comprises presensitizing the non-metallic surface to the electroless deposition of metal by a method which comprises:

(a) contacting said non-metallic surface with an activatable copper complex in a liquid medium containing cuprous ions and cupric ions in a weight ratio of cuprous ions to cupric ions not less than 0.4:1, said medium resulting from the admixture of a polar liquid, an acid, a halogen-containing compound, a cuprous compound, and absorbing on said surface a derivative from said liquid medium,

(b) rinsing said contacted surface with said derivative thereon with an aqueous medium to remove the excess of said medium from said surface and to water-insolubilize said derivative adsorbed on said non-metallic surface,

(c) after said surface has been rinsed and the excess of said medium has been removed from said surface, treating the water-insolubilized derivative on said sensitized surface

with a reducing agent to render the surface catalytically active to electroless deposition of metal.

4,199,624

TREATMENT OF SUBSTRATE PRIOR TO AUTODEPOSITION

Timothy J. C. Smith, Colmar, Pa., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 755,920, Dec. 30, 1976, abandoned. This application Jun. 21, 1978, Ser. No. 917,505

Int. Cl.[2] B44L *1/98;* C23F *7/00;* B05D *3/00, 1/18*

U.S. Cl. 427—309 10 Claims

1. In a coating process wherein an autodeposited coating is formed on a metal surface by contacting said surface with an autodepositing coating composition comprising an acidic aqueous solution containing dissolved fluoride and ferric iron and having resin solids dispersed therein and wherein the nature of said metal surface is at least partly roughened or worked such that the cured autodeposited coatings formed on such metal surface from said composition contain defects, the improvement comprising pre-treating such metal surface which is substantially free of soils of the type that are removed by acid cleaning with a non-coating forming aqueous acid solution prior to contacting said surface with said autodepositing composition to prevent the formation of pinholes in the cured autodeposited coating.

4,199,625

RENDERING POROUS STRUCTURES IMPERMEABLE BY TREATMENT WITH PH INSENSITIVE GELABLE COMPOSITIONS OF AMIDE POLYMERS

Richard J. Pilny, and Thomas W. Regulski, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 2, 1978, Ser. No. 911,863

Int. Cl.[2] B05D *7/24;* C08L *61/20*

U.S. Cl. 427—385.5 13 Claims

1. A method for rendering a porous structure impermeable which comprises treating the porous structure with a gelable aqueous reaction mixture comprising an aqueous medium having dispersed therein a water-soluble polymer derived from an ethylenically unsaturated amide, an aliphatic polyaldehyde and a metal salt of a hypohalite in proportions such that under conditions of temperature and alkaline pH greater than 7.5 the reaction mixture upon being forced into and over the porosities of the structure reacts to form a gel capable of rendering said structure impermeable to the passage of aqueous liquids.

4,199,626

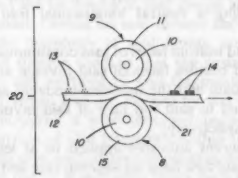
ELECTROGRAPHIC FIXING MEMBER AND APPARATUS AND PROCESS USING SAME

Walter A. Stryjewski, Hilton, and John F. Wright, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 10, 1975, Ser. No. 612,074

Int. Cl.[2] G03G *15/20*

U.S. Cl. 427—444 14 Claims



1. A roll useful as a fixing member in a direct fuser device for fixing heat-softenable toner powder images to a receiving member by contacting the heat-softenable toner powder image with said roll, said roll comprising a cylindrical core having an adhesive composition comprising an elastomeric fluoropolymer affixed to the peripheral surface of said core, said elastomeric fluoropolymer being a crosslinked polymer comprising repeating units of tetrafluoroethylene and perfluoroalkyl perfluorovinylether.

4,199,627

DECORATIVE GRASS

Erwin H. Weder, Highland, Ill., and Donald E. Weder, Hobart, Okla., assignors to Highland Manufacturing & Sales Co., Highland, Ill.

Filed Jul. 7, 1975, Ser. No. 593,446

Int. Cl.[2] A41G *1/00*

U.S. Cl. 428—7 3 Claims

1. Decorative grass for use in filling Easter baskets, candy boxes, preparing floral arrangements, wreaths and other decorative purposes comprising a lightweight mass of randomly arranged flexible, thin, extruded, thermoplastic plastic film strips intertwined into a cohesive mass, said strips having substantially the same length, width and thickness and including flat portions, random longitudinal curls and random transverse curls for increasing the volume of the mass without increasing the weight, said curls being defined by strips stretched lengthwise by moving one end approximately five times as far as the other end while heated thereby decreasing the width and thickness of the strips.

4,199,628

VERMICULAR EXPANDED GRAPHITE COMPOSITE MATERIAL

Ronald S. Caines, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 23, 1978, Ser. No. 889,308

Int. Cl.[2] C01B *31/04;* B32B *31/20, 27/00*

U.S. Cl. 428—36 14 Claims

1. In a method of preparing compressed forms of expanded graphite including the steps of

(a) providing a supply of vermicular expanded graphite;

(b) providing a supply of a corrosion resistant resin;

(c) blending said vermicular expanded graphite and corrosion resistant resin in an amount of from about 3 to about 50 weight percent resin based on the total weight of the vermicular expanded graphite-resin mixture;

(d) compressing said mixture at a pressure within the range of from about 5 to about 50,000 pounds per square inch in predetermined directions into predetermined forms of graphite;

the improvement comprising:

(1) blending said vermicular expanded graphite with said corrosion resistant resin in the form of a dispersion of said resin in a volatile liquid carrier;

(2) vaporizing said liquid carrier; and

(3) heating said composite material to a sufficient temperature to sinter said resin prior to compression.

11. An article comprising a substrate having at least one

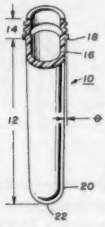
surface thereof coated with a compressed vermicular expanded graphite composite material prepared in accordance with the method of claim 1.

4,199,629

FORMING MOLECULARLY ORIENTED CONTAINERS FROM REHEATED PREFORMS

Purushottam D. Agrawal, Mystic, and John E. Griesing, East Granby, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 844,652, Oct. 25, 1977, Pat. No. 4,131,666.
This application Aug. 4, 1978, Ser. No. 930,970
Int. Cl.[2] B65D *23/00*; B32B *7/02*; B29C *17/07*
U.S. Cl. 428—35 8 Claims



1. A tubular, injection molded preform of thermoplastic material for distending into a container shape said preform comprising a body having a closed end and a finish portion at the opposite end, said preform having a value of between about 0.005 to 0.011 inch^{-1} for the ratio of average thickness to inside body surface area wherein average thickness is the arithmetical mean of: (a) the thickness in the vicinity of the junction of the body with the finish portion and (b) the thickness at the confluence of the sidewall with the closed end, said body exhibiting between about 4 to 15 percent shrinkage on reheating to within the orientation temperature range of the thermoplastic material.

5. A tubular, injection molded preform for blowing into a circular, molecularly oriented container, said preform comprising a thermoplastic material containing from about 50 to 90 weight percent of a polymerized monomer selected from the group consisting of acrylonitirle, methacrylonitrile and mixtures thereof, said preform satisfying the relation:

$$y=0.297\times10^{-3}(X)^{-2.068}$$

where:

y=percent shrink of the preform during heating to orientation temperature of the thermoplastic material and is between 4 to 15; and

(X)=average preform thickness/inside preform body surface area in reciprocal inches.

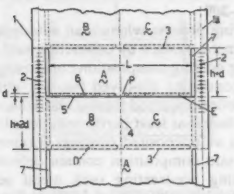
7. An injection molded preform comprising a body having closed and open ends which is free of excessive strains as evidenced by a shrinkage of between about 6 to 15 percent during reheat to molecular orientation temperature, said preform being formed of a polymerized nitrile-group-containing monomer and having a value of between about 0.005 to about 0.011 inch^{-1} for the ratio of average thickness to inside body surface area wherein average thickness is the arithmetical mean of the thickness adjacent the open and closed ends.

4,199,630

CONTINUOUS PAPER STRIP OR THE LIKE TO FORM INVOICES AND THE LIKE TRANSFORMABLE INTO CLOSED COVERS

Luciano Consiglio, Grottaferrata, Italy, assignor to S.I.P. Societa' Italiana per l'Esercizio Telefonico P.A., Italy

Filed Aug. 8, 1977, Ser. No. 822,924
Claims priority, application Italy, Mar. 24, 1977, 48616 A/77; May 26, 1977, 49571 A/77
Int. Cl.[2] B65D *27/10, 27/16*
U.S. Cl. 428—43 6 Claims



1. A continuous strip of paper or the like, which is divisible into a plurality of invoice-cover combinations which are individually mailable and include machine-readable address indicia, comprising:

(a) a continuous web of paper or the like;

(b) a longitudinal side portion defined on each longitudinal side of said continuous web, each including a plurality of longitudinally-spaced perforations;

(c) a plurality of equally spaced transverse tear lines extending across said continuous web;

(d) a strip element defined between each adjacent pair of transverse tear lines in said continuous web;

(e) each strip element including a pair of longitudinal slots extending longitudinally of said continuous web across a portion of said strip element and adjoining each longitudinal side portion of said web respectively;

(f) each strip element comprising an invoice portion defined between each said pair of longitudinal slots;

(g) a cover portion;

(h) each invoice and cover portion of said strip element separated from each other by a transverse fold line;

(i) each invoice portion having a longitudinal height equal to h plus d, where d is the longitudinal width of a first band adjacent said fold line and h is the longitudinal width of said invoice portion on which data is applied;

(j) each cover portion having a longitudinal height equal to h plus *2d*, with a second band of longitudinal width d defined on said cover portion adjacent one of said transverse tear lines;

(k) the transverse width of each invoice portion equaling L between said pair of longitudinal slots and the transverse width of each cover portion with said longitudinal side portions cut away equalling L plus *2d* and including a third band of width d defined on each longitudinal side thereof;

(l) said continuous web having a top face and a bottom face and including a central longitudinal fold line defined therein;

(m) the top and bottom faces of said continuous web defining the top and bottom faces of said invoice and cover portions, said data and the machine-readable address indicia being applied to said top face of said invoice and cover portions respectively;

(n) a self-adherent adhesive applied to at least the major portion of said first band on said top face and to at least the major portion of said second and third bands on said bottom face, each one of said bands including a part with adhesive on one transverse side of said central longitudinal fold line and another part with adhesive on the other transverse side of said central fold line;

(o) said strip element being arranged in said web with alternating invoice and cover portions;

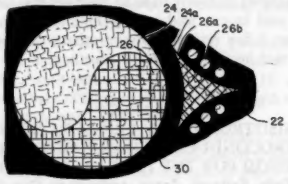
(p) whereby said continuous web is machine fed by a machine with dragging and guide means by engagement of the dragging means with said perforations in said longitudinal side portions and stacked by folding said web along said transverse tear lines, said web being divisible into separate strip elements along said transverse tear lines with each strip element being foldable along said transverse fold line and then along said central longitudinal fold line to cover said invoice portion with said cover portion with said top surface of said cover portion being exposed and to bring the adhesive of said one and other parts of each band into contact with each other to seal said cover closed, said cover being openable by disengaging the adhesive of said one part of each band from the adhesive of said other part of each band.

4,199,631

DESIGN AND METHOD OF FABRICATING SAME

Yong-Duek Cheon, 5539 21st South, Seattle, Wash. 98108

Filed Nov. 19, 1976, Ser. No. 743,178
Int. Cl.² B92B *3/14*; B14C *1/00*
U.S. Cl. 428—14 **4 Claims**



1. A method of fabricating a design occupying a predetermined design area on a surface, comprising:

securing a plurality of decorative fragments to said surface to cover said design area with some of said fragments extending beyond the periphery of said design area;

placing an opaque fluid on said surface and said fragments around the periphery of said design area so that the surface around said fragments and the portion of said fragments extending beyond said design area are masked by said fluid;

placing a predetermined pattern on said fragments within said design area, said pattern simulating the intersection of fragments cut to match each other such that said design appears to consist of a large number of fragments precisely cut in accordance with said pattern; and

covering said fragments within said design area with a clear sealant to protect said fragments.

4. A design occupying a predetermined design area on a surface, comprising:

a plurality of decorative fragments secured to said surface to cover said design area with some of said fragments extending beyond the periphery of said design area;

an opaque mask formed on said surface and said fragments around the periphery of said design area by applying thereto an opaque fluid so that the surface around said fragments and portions of said fragments extending beyond said design area are masked by said fluid, said mask further including a predetermined pattern covering at least a portion of said fragments within the periphery of said design area, said pattern simulating the intersection of fragments cut to match each other such that said design appears to consist of a large number of fragments precisely cut in accordance with said pattern; and

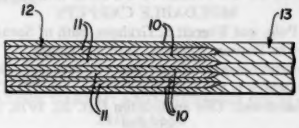
a layer of clear sealant covering said fragments within said design area to protect said fragments.

4,199,632

COMPRESSED WOOD IMPLEMENT HANDLES AND METHOD OF MAKING

Charles F. Travis, P.O. Box 1785, Greenville, S.C. 29602

Filed Jun. 16, 1976, Ser. No. 696,687
Int. Cl.² B32B *3/10*
U.S. Cl. 428—54 **5 Claims**



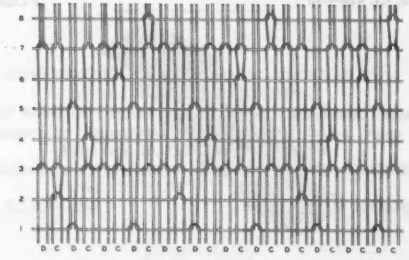
1. An impact delivery member comprising an elongated unitized body portion, said body portion consisting of a multiplicity of main full length wood veneers in superposed relationship extending from end-to-end in the body portion, and a second multiplicity of comparatively short partial length supplemental wood veneers intervened with the main full length veneers, the supplemental veneers being positioned at one end portion only of said body portion to increase the mass and density of the body portion at such end portion following compression of all of the veneers, adhesive resin disposed between all of the veneers in said body portion and all of the veneers being compressed normal to their major surfaces and throughout the entire length of the body portion to such a degree that the body portion has imparted to it a substantially uniform thickness throughout its length and is unitized, the compressed body portion at said one end portion having the supplemental veneers being of increased density and mass compared to the remainder of said body portion having only said main full length wood veneers.

4,199,633

NAPPED DOUBLE KNIT FABRIC AND METHOD OF MAKING

James H. Blore, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 16, 1978, Ser. No. 906,532
Int. Cl.² D06C *11/00*; B32B *33/00, 7/00*; D03D *9/00*
U.S. Cl. 428—91 **17 Claims**



14. A napped double knit fabric having first and second sets of alternating wales, said first set of alternating wales forming the face of said fabric and said second set of alternating wales forming the reverse side of said fabric, said fabric including:

a plurality of courses with each said course including at least one yarn, said courses being knitted in a preselected pattern and said courses joined together at selected wales, a plurality of first yarns forming a plurality of first courses and a plurality of second yarns forming a plurality of second courses, said first yarns having been shrunk more than said second yarns after said fabric was knitted, at least one said first course is followed by at least one said second course and nap on the front face formed by said

second yarns having portions thereof floating on the front face of the fabric broken with the length of the floating portions being at least two wales of the first set of alternating wales between knit stitches.

4,199,634

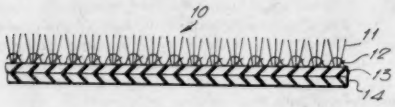
METHODS OF MAKING SOUND INSULATION MOLDABLE CARPETS

Ernest G. Pole, and Everett S. Graham, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Continuation-in-part of Ser. No. 926,090, Jul. 19, 1978, abandoned, which is a continuation of Ser. No. 774,476, Mar. 4, 1977, abandoned. This application Oct. 20, 1978, Ser. No. 953,029

Int. Cl.[2] B32B *3/02*

U.S. Cl. 428—95 **12 Claims**



12. A sound insulating floor or wall covering comprising a carpet having a carpet pile carried by and extending from one side of a primary fabric backing and an unfoamed sound insulating backing and a carpet contour retaining layer carried upon the other side of the primary fabric backing, the sound insulating backing including a cured rubbery polymer made by preparing a latex composition which included at least 200 dry parts by weight of filler per 100 dry parts by weight of solids in the latex, the covering being in a non-planar configuration and held in said configuration by the stiffness of the carpet contour retaining layer which is in a set condition.

4,199,635

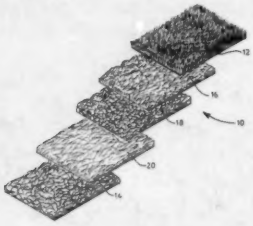
FABRIC FACED LAMINATE PANEL AND METHOD OF MANUFACTURE

Roy B. Parker, Monmouth, Me., assignor to Albany International Corp., Albany, N.Y.

Filed Apr. 20, 1979, Ser. No. 32,243

Int. Cl.[2] B32B *5/02*

U.S. Cl. 428—95 **2 Claims**



1. A decorative laminate panel, which comprises;
a core of non-woven, synthetic textile fibers;
a first layer of heat fused synthetic, thermoplastic textile melt fibers;
a second layer which comprises a film of synthetic polymeric resin;
said first and second layers sandwiching the core, fibers of said first layer and the core being interengaged with each other and with the second layer, said interengagement being of the character obtained by needling;
a batt of non-woven textile fibers attached to the second layer by needling; and
a decorative textile fabric adhered to the outer surface of the first layer; said adherence being by anchoring of the fabric ground in the fused fibers of the first layer.

4,199,636

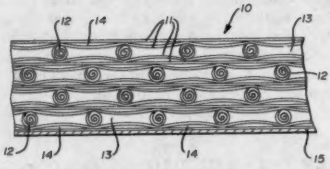
INSULATION

William H. Clark, 4284 E. State St., Sharon, Pa. 16146

Filed Feb. 26, 1979, Ser. No. 15,139

Int. Cl.[2] B32B *3/06, 3/12*

U.S. Cl. 428—114 **7 Claims**



1. Insulation material consisting of a plurality of layers of newspaper, each of said layers formed of several sheets of newspaper loosely attached to one another so as to form many small air spaces therebetween, tubular members spacing each of said plurality of layers so as to form several large air spaces between said layers, said tubular members formed of rolled newspaper, a fire resistant, preservative and binding material securing said insulation material together.

4,199,637

ANISOTROPICALLY PRESSURE-SENSITIVE ELECTROCONDUCTIVE COMPOSITE SHEETS AND METHOD FOR THE PREPARATION THEREOF

Ryoichi Sado, Saitama, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Japan

Continuation-in-part of Ser. No. 743,920, Nov. 22, 1976, abandoned. This application Jun. 1, 1978, Ser. No. 911,418

Claims priority, application Japan, Nov. 26, 1975, 50-141487

Int. Cl.[2] B32B *7/00, 5/08, 5/16*

U.S. Cl. 428—119 **10 Claims**

1. An anisotropically electroconductive thin composite sheet having a plane top surface and a plane bottom surface substantially parallel to said top surface, and composed of an electrically insulating material and a plurality of electrically conductive fibers dispersed through said sheet in alignment in a direction substantially perpendicular to said plane top surface and said plane bottom surface, the average length of said electrically conductive fibers ranging from 20 to 80% of the thickness of said sheet and at least some extending completely through said sheet.

4,199,638

COMPOSITION FOR WRITE-ON KEY TAG AND STICKER

Raymond J. McKee, P.O. Box 246, Wayne, N.J. 07470

Filed Nov. 3, 1977, Ser. No. 849,661

Int. Cl.[2] B32B *3/10, 7/02*

U.S. Cl. 428—131 **4 Claims**

1. A substantially flat sheet stock material for the manufacture of key tags having an aperture formable in the sheet stock material portion of the key tag, together with a metal ring fittable through the aperture, the material having a thickness of

about 0.018 inch to about 0.025 inch and being formable from a melt consisting essentially of a fused blend of:

(a) approximately 3 parts by volume of powdered high density polyethylene with a molecular weight of at least about 6,000, a melt index of about 6 to about 18, a tensile strength of about 4,000 psi and an impact strength of about 8 Ft-lb/in/notch; and

(b) one part by volume of powdered low density polyethylene with a molecular weight of at least about 6,000, a melt index of about 16 to 25, a tensile strength of about 1500 psi, and an impact strength of about 10 Ft-lb/in/notch;

the powdered high and low density polyethylenes forming the melt being powders of a mesh particle size which facilitates melting thereof at a temperature of about 400° F. to about 500° F., the melt being extrudable to form the substantially flat material with a relatively dull side and a relatively light-reflective side, the relatively dull side being characterized by a high degree of adhesion of printing inks or other marking substances, the material being die cuttable and having sufficient tear resistance to prevent pulling of the metal ring through the material during use of the key tag, the material further having sufficient flexibility to impart to the key tag resistance to cracking.

3. A substantially flat sheet stock material for the manufacture of window stickers formable by die cutting of the flat sheet stock material, the material having a thickness of about 0.018 inch to about 0.025 inch and being formable from a melt consisting essentially of a fused blend of:

(a) approximately 3 parts by volume of powdered high density polyethylene with a molecular weight of at least about 6,000, a melt index of about 6 to about 18, a tensile strength of about 4,000 psi and an impact strength of about 8 Ft-lb/in/notch; and

(b) one part by volume of powdered low density polyethylene with a molecular weight of at least about 6,000, a melt index of about 16 to 25, a tensile strength of about 1500 psi, and an impact strength of about 10 Ft-lb/in/notch;

the powdered high and low density polyethylenes forming the melt being powders of a mesh particle size which facilitates melting thereof at a temperature of about 400° F. to about 500° F., the melt being extrudable into said substantially flat material having a relatively dull side and a relatively light reflective side, the relatively dull side being characterized by a high degree of adhesion of printing inks or other marking substances, the material having a high degree of adherability to a window and being free from curling away from the window when subjected to heat, the material further having sufficient flexibility to lie flat against the window.

4,199,639

SANDWICH-STRUCTURED DOUBLE LAYER FLOOR COVERING

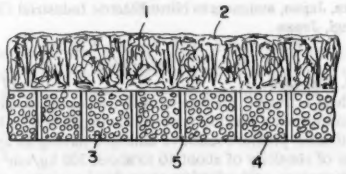
Walter Ronc, Drisglerstrasse 43, 8107 Buchs,ZH, Switzerland

Filed Jul. 10, 1978, Ser. No. 923,386

Claims priority, application Switzerland, Jul. 25, 1977, 009256/77

Int. Cl.² B32B *3/10, 5/00;* D04H *1/04*

U.S. Cl. 428—138 **7 Claims**



1. Sandwich-structured double layer floor covering composed of A) an upper surface layer of fleece at least 5 millimeters thick made of synthetic polymer fiber with, said upper surface having a minimum needlework of 2 million stitches per square meter, and B) a lower layer of cellular polyethylene having closed cells and a density between 25 and 35 kilograms per cubic meter and a thickness of at least 5 millimeters, said upper layer and said lower layer being hot welded together without adhesive.

4,199,640

DECORATIVE FABRIC AND METHOD OF MAKING THE SAME

Daniel S. Goldman, c/o The Synthetics Group Two Bala Cynwyd Plz., Bala Cynwyd, Pa. 19004

Continuation-in-part of Ser. No. 942,432, Sep. 14, 1978. This application Oct. 13, 1978, Ser. No. 951,179

Int. Cl.² B32B *3/02*

U.S. Cl. 428—192 **10 Claims**

1. A decorative fabric comprising

longitudinal decorative face yarns in a flat side by side continuous disposition providing the exposed face of the fabric,

said face yarns having fibers thereof disposed therethrough and exposed on the rear of the face yarns and being joined along their longitudinal edges by fibers of adjoining yarns, and

a bonding coating on the exposed lower face of the face yarns and in engagement with said lower face and said fibers at said lower face and retaining the integrity of the fabric.

4,199,641

COVERING FILM FOR CASTING PROCESS BY VACUUM SEALED MOLDING

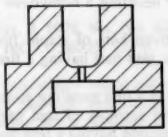
Syunji Aono, and Atsushi Toyoda, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Oct. 20, 1978, Ser. No. 953,018

Claims priority, application Japan, Oct. 21, 1977, 52/125787

Int. Cl.² B32B *7/02;* B22C *9/12*

U.S. Cl. 428—213 **8 Claims**



1. Improved covering film of at least 30 micron meters thickness for casting process by vacuum sealed molding comprising

at least 10% by weight of a thermoplastic resin productive of burnt dregs and

a thermoplastic resin not productive of burnt dregs.

4,199,642
LOW FLAME-RESPONSE POLYESTER FIBERFILL BLENDS

John L. Cooper, West Grove, Pa., and James A. Newnam, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 671,278, Mar. 29, 1966, Pat. No. 4,040,371. This application May 5, 1977, Ser. No. 794,225
Claims priority, application Canada, Mar. 25, 1977, 274818
The portion of the term of this patent subsequent to Aug. 9, 1994, has been disclaimed.
Int. Cl.[2] D02G *3/00;* D04H *1/58*
U.S. Cl. 428—288 16 Claims

1. An intimate blend comprising, by weight, about 80 to 98% of polyester fiberfill and about 2 to 20% of synthetic organic filamentary material that maintains its physical integrity when exposed to the flame from a burning match, wherein the polyester has a cured polysiloxane coating.

4,199,643
WATER-INSOLUBLE COPOLYMERS CONTAINING AMIDE-POLYALDEHYDE THERMOSETTABLE SYSTEM

Dominic R. Falgiatore, Philadelphia, and William D. Emmons, Huntingdon Valley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 3, 1977, Ser. No. 848,258
Int. Cl.[2] B32B *27/10;* C08L *61/20*
U.S. Cl. 428—290 21 Claims

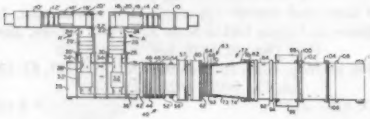
1. A water-insoluble addition copolymer of (A) a monomer which is the product of an ethylenically unsaturated unsubstituted amide monomer condensed with one aldehyde group of a polyaldehyde, the product having at least one free aldehyde group, and (B) at least one other ethylenically unsaturated monomer; the amide monomer component of (A) and any unsubstituted amide monomer of (B) totaling up to 25% of the total monomers, by weight.

21. A nonwoven fabric comprising the copolymer of claim 1.

4,199,644
METHOD FOR THE PRODUCTION OF A NEEDLED NONWOVEN FABRIC

Louis Piatt, Seneca, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 13, 1977, Ser. No. 860,264
Int. Cl.[2] B29D *27/00;* D04H *18/00*
U.S. Cl. 428—300 31 Claims



1. A method for needling a nonwoven batt of staple fibers comprising:

passing a nonwoven batt of staple fibers to at least two needling zones, said batt having a first surface and a second surface,

needling the batt in a first needling zone by penetrating said first and second surfaces of said batt with needles in a reciprocating motion having a first needling direction and a second needling direction wherein each needle in said first needling zone has a blade with at least one barb attached thereto, said at least one barb catching staple fibers when said barb moves through said batt in the first needling direction of said reciprocating motion,

passing the thus-needled batt to a second needling zone, and

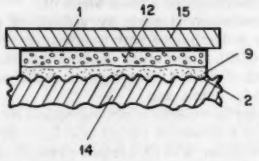
needling the batt in said second needling zone by penetrating said first and second surfaces of said batt with needles in said reciprocating motion wherein each needle in said second needling zone comprises a blade having at least a first barb attached thereto which catches staple fibers when said first barb moves through said batt in the first needling direction of said reciprocating motion and at least a second barb attached thereto which catches staple fibers when said second barb moves through said batt in the second needling direction of said reciprocating motion.

12. A needled nonwoven batt of staple fibers produced in accordance with the method of claim 1.

4,199,645
MULTI-LAYER ADHESIVE MATERIAL COMPRISING TWO EXTERNAL ADHESIVE LAYERS AND AN INTERNAL ELASTIC LAYER AND METHOD OF USING SAME FOR BONDING BODIES TO ONE ANOTHER

Günter Schwarz, Steinacherstr. 67, 8804 Au, Zürich, Switzerland

Filed Feb. 2, 1978, Ser. No. 874,426
Claims priority, application Switzerland, Feb. 16, 1977, 1940/77
Int. Cl.[2] C09J *5/02, 5/04, 5/06, 7/02*
U.S. Cl. 428—339 9 Claims



1. A multi-layer composite for producing an adhesive bond between two substantially mutually parallel surfaces comprising two outer adhesive layers, one on each opposed major face, a plastic carrier layer immediately adjacent one outer adhesive layer and an elastic carrier layer adjacent the plastic carrier layer.

2. The multi-layer composite of claim 1 wherein a second plastic carrier layer is disposed immediately adjacent the second outer adhesive layer interior thereto.

6. A method of bonding a first body to a second body by means of an adhesive material, comprising the steps of:

profiling a surface of the first body which is to be connected with the second body in order to increase its adhering surface;

pressing said surface of the first body against an adhesive surface of the composite of claim 1 or claim 2 and bonding the surfaces together; and pressing a surface of a second body against the other adhesive surface of the composite of claim 1 or claim 2 and bonding the surfaces together.

4,199,646
HEAT-ACTIVATABLE, PRESSURE-SENSITIVE ADHESIVE TAPE OR SHEET

Yutaka Hori; Makoto Sunagawa, and Naoki Matsuoka, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaragi, Japan

Filed Aug. 9, 1978, Ser. No. 932,157
Int. Cl.[2] C08L *33/14*
U.S. Cl. 428—344 17 Claims

1. A heat-activable, pressure-sensitive adhesive tape or sheet which comprises a backing material having thereon a layer of heat-activable, pressure-sensitive adhesive having an apparent modulus of elasticity of about 10 to about 300 kg/cm^2 at normal temperature, said adhesive comprising a mixture of

(a) 100 parts by weight of a copolymer of (i) an alkyl acrylate ester or an alkyl methacrylate ester and (ii) a polymerizable monomer having a functional group selected from the

class consisting of a carboxyl group, a hydroxyl group, a glycidyl group, or a methylol group, and

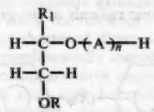
(b) about 50 to 200 parts by weight of a reactive hot-melt resin that is miscible with said copolymer (a), has a melting point of about 60° C. or higher, and has at least one functional group reactive with the functional group of said copolymer (a), either directly or through a cross-linking agent, and selected from the class consisting of an epoxy resin, a xylene resin containing a methylol group, a rosin resin, a phenolic novolac or resole resin, a rosin-modified phenolic resin, a terpene-modified phenolic resin or a maleic anhydride-modified petroleum resin.

4,199,647
FIBER LUBRICANTS DERIVED FROM POLYETHOXYLATED AND POLYOXYALKYLATED REACTION PRODUCTS OF AN ALPHA-OLEFIN EPOXIDE AND A FATTY ALCOHOL

David D. Newkirk, and Robert B. Login, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 30, 1977, Ser. No. 856,047
Int. Cl.[2] C07C *43/00, 43/04;* D06M *3/38, 5/08, 15/10*
U.S. Cl. 428—394 **5 Claims**

1. The process of lubricating thermoplastic synthetic fibers comprising the application to said fibers of a composition comprising a compound having the structural formula:



wherein R and R_1 are independently selected from straight or branched chain aliphatic radicals having about 7 to about 22 carbon atoms; A is oxyethylene or a heteric mixture of oxyethylene and oxypropylene residues derived from the reaction of ethylene oxide and 1,2-propylene oxide in the respective ratio by weight of 3:7 to 9:1, and n has a value to produce said compound having a molecular weight of about 300 to about 3000.

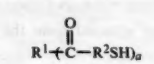
4,199,648
POLYCARBONATE ARTICLE COATED WITH A PHOTOCURED COATING

Herbert L. Curry, Lenox, Mass., and Walter L. Hall, Mt. Vernon, IN, assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 19, 1978, Ser. No. 952,677
Int. Cl.[2] B05D *3/06;* B32B *27/36, 27/32*
U.S. Cl. 428—409 **20 Claims**

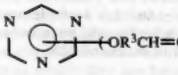
1. A polycarbonate article having deposited on the surface thereof a photocurable composition consisting essentially of:

(i) a polythiol represented by the general formula



wherein R^1 and R^2 are organic moieties containing no reactive carbon-to-carbon unsaturation and a is 2 to 4;

(ii) a polyene represented by the general formula



wherein R^3 is a straight chain aliphatic moiety containing no reactive carbon-to-carbon unsaturation; and,

(iii) a silicon-modified polyester copolymer.

4,199,649
AMORPHOUS MONOMOLECULAR SURFACE COATINGS

Albert P. Yundt, Medfield, Mass., assignor to Bard Laboratories, Inc., Amherst, N.H.

Filed Apr. 12, 1978, Ser. No. 895,754
Int. Cl.[2] B32B *9/04*
U.S. Cl. 428—411 **22 Claims**

1. In a method for providing a photoresist pattern on a semiconductor wafer substrate in which a mask surface is passed into intimate contact with the outer surface of a photoresist layer covering a semiconductor wafer substrate, the mask is exposed to actinic radiation for the selective irradiation of the photoresist layer covering the semiconductor substrate and the mask is removed from contact with the photoresist covered semiconductor substrate surface to provide a selectively soluble photoresist pattern on the wafer substrate, the improvement comprising providing for improved separation of the mask surface by coating at least one of said surfaces, with an abhesive, monomolecularly thin, substantially amorphous loop-bonded film, said loop-bonded abhesive film being formed of polymer chains each attached at the same one of said surfaces by bonding groups at the respective ends of said chains to form surface-bound, non-crystalline loops having a length of at least about 60 Angstroms.

4,199,650
MODIFICATION OF THE ELECTRICAL AND OPTICAL PROPERTIES OF POLYMERS

Michael J. Mirtich, N. Olmsted, and James S. Sovey, Strongsville, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 7, 1978, Ser. No. 958,575
Int. Cl.[2] B05D *3/06*
U.S. Cl. 428—421 **10 Claims**

1. A method of treating the surface of a polymer to modify the surface morphology, optical and electrical properties of the same to attain high thermal emittance and low sheet resistance comprising the steps of

placing said polymer in a vacuum environment of about 4×10^{-5} torr,

exposing at least one surface of the said polymer to a beam of ions having an energy between about 500 and 1000 eV and an ion beam current density between 0.1 and 1.0 mA/cm^2 and

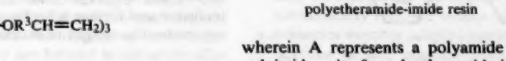
neutralizing said ion beam.

4,199,651
NOVEL POLYETHERAMIDE-IMIDE PHENOLIC RESIN BLENDS

Eugene G. Banucci, Scotia, and Edith M. Boldebuck, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

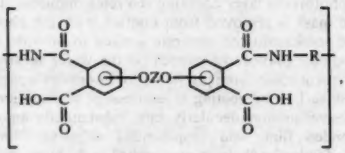
Filed Nov. 3, 1975, Ser. No. 628,330
Int. Cl.[2] B32B *15/08*
U.S. Cl. 428—458 **24 Claims**

1. An electrically conductive metal substrate coated with a polyetheramide-imide phenolic resin blend comprising a polyetheramide-imide resin and a phenolic resin of the formula, respectively,

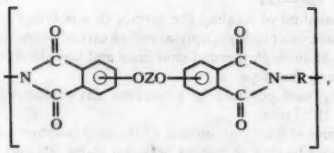


wherein A represents a polyamide unit and B represents a polyimide unit of a polyetheramide-imide resin, m represents a

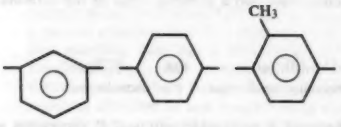
mole fraction number greater than or equal to zero, C represents a phenolic resin, "a" represents a resin blend proportion number greater than zero and less than 1, the sum of "a" plus "b" equals 1.0, further wherein said polyamide unit is of the formula:



and said polyimide unit is of the formula:



wherein the O-Z-O units of said polyamide or said polyimide units are in the 3 or 3′ or 4 or 4′ positions and Z is a member of the class consisting of (1)



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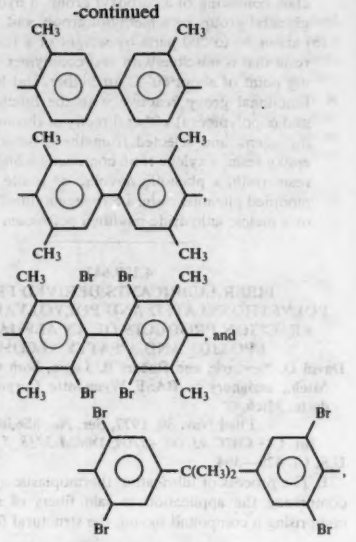
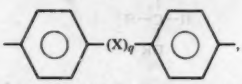
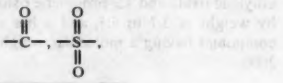


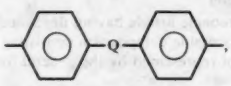
and (2) divalent organic radicals of the general formula



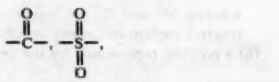
where X is a member selected from the class consisting of divalent radicals of the formulas $-C_yH_{2y}-$,



—O— and —S—, where q is 0 or 1, y is a whole number from 1 to 5, and R is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (c) divalent radicals included by the formula



where Q is a member selected from the class consisting of —O—,



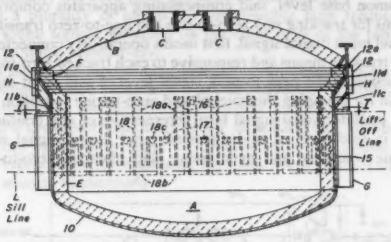
—S—, and $-C_xH_{2x}-$, and x is a whole number from 1 to 5 inclusive and further wherein said phenolic resin has an average molecular weight in excess of 125.

4,199,652

AIR COOLED ELECTRIC ARC FURNACE

Levi S. Longenecker, 61 Mayfair Dr., Pittsburgh, Pa. 15228

Filed Feb. 9, 1979, Ser. No. 10,702
Int. Cl.[2] F27D 1/12
U.S. Cl. 13—32 21 Claims



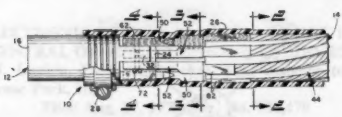
15. In an improved electric furnace having an upright refractory enclosing side wall of tile member construction that terminates in an upper open mouth portion for receiving an overhead enclosing roof through which electrodes are adapted to centrally extend and with respect to which fume and smoke are adapted to exhaust, the improvement which comprises, a ring-like duct about the outside of the upper open mouth portion of the refractory side wall, means for supplying cooling fluid to said duct, a plate-like enclosure extending downwardly from said duct along and about the refractory side wall, the refractory side wall having shortened dimension refractory tile defining a group of circumferentially spaced-apart J-shaped cooling-fluid-receiving chambers with respect to and along said plate-like enclosure; each said J-shaped chamber having a relatively long downwardly extending leg portion, having a cross-extending foot portion connected at one end to a bottom end of said relatively long leg portion, and having a relatively shorter leg portion extending upwardly from and connected to an opposite end of said foot portion; inlet port means oppen from said duct to an upper end of said relatively long leg portion of each of said chambers for supplying cooling fluid thereto for down-flow therealong, along said foot portion, and upwardly along said shorter leg portion; and outlet port means connected to the upper end of said shorter leg portion of each of said J-shaped chambers for discharging warmed fluid therefrom.

4,199,653

TERMINATION FOR ALTERNATE POLARITY RESISTANCE WELDING CABLE

Lawrence M. Talley, Bay Village, Ohio, assignor to Watteredge-Uniflex, Inc., Avon Lake, Ohio

Filed Jun. 14, 1978, Ser. No. 914,581
Int. Cl.[2] H01R 11/10
U.S. Cl. 174—15 WF 30 Claims



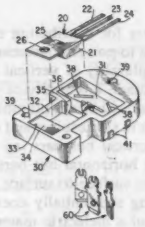
1. A cable terminal assembly comprising, a terminal including two mutually insulated terminal lug elements, a cable including two mutually insulated leads, each lead including three conductors spaced alternately and circumferentially with the conductors of the other lead, said cable having a terminal end formed of substantially straight end portions of said conductors longitudinally in alignment with the respective conductors' relative positions in which they are located in the cable adjacent said terminal end, first connector means secured to two of said conductors of each lead at said end portions and second connector means secured to the other one of said conductors of each lead, and means for securing said connector means corresponding to one lead to one of said terminal lug elements and said connector means corresponding to the other lead to the other terminal lug element, said connector means of each lead being alternately spaced with those of the other lead.

4,199,654

SEMICONDUCTOR MOUNTING ASSEMBLY

Robert W. DeRoss, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sep. 14, 1977, Ser. No. 833,112
Int. Cl.[2] H01L 23/12; H01R 9/14
U.S. Cl. 174—52 FP 19 Claims



1. An assembly for mounting an electronic switching device containing a heat generating semiconductor to an associated heat sink and interconnecting said switching device to an associated electrical component wherein the switching device includes a body portion of predetermined thickness containing the semiconductor, a plurality of leads protruding from the body portion and a metallic heat conductive mounting tab of predetermined thickness carried by the body portion and protruding in a direction opposite to the leads, said assembly comprising:

a housing of dielectric material, said housing having a body cavity for receiving the body portion of the switching device and a tab cavity for receiving said mounting tab of the switching device, the depth of said body cavity being greater than the thickness of the body portion of the switching device to thereby receive substantially the entire body portion therein, the depth of said tab cavity being less than the thickness of the associated mounting tab of the switching device to thereby bias said mounting tab outwardly from said housing, whereby upon mounting said housing to the heat sink said mounting tab will be maintained in intimate heat transmitting contact with the heat sink while the body portion will be substantially completely disposed within said housing without bearing any substantial mounting forces;

a plurality of electrical contacts fixedly secured to said housing, each contact having an active contact portion on the exterior of said housing and a terminal portion within said housing and crimpable to one of the electronic switching device leads whereby said switching device may be electrically connected to each said contact and mechanically retained within said housing; and

a connector member adapted to mate with the active contact portions of said contacts and electrically connect said switching device to said associated electrical component.

4,199,655

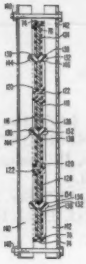
CIRCUIT BREAKER WITH INSULATED HORIZONTAL BUS BARS

Sadiq A. Shariff, Palos Park; John R. Wilson, Darien; Brij M. Bharteey, Bolingbrook, and Neal E. Rowe, Oak Forest, all of Ill., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 28, 1978, Ser. No. 946,702

Int. Cl.[2] H02G 5/06; H02B 1/20

U.S. Cl. 174—72 B **5 Claims**



1. A control center for distributing electric power from a power supply source to power consuming devices, comprising a cabinet having a plurality of vertical compartments on the front side of the cabinet, a plurality of vertical, horizontally-spaced bus bars in said cabinet, a plurality of horizontal, vertically-spaced bus bars in said cabinet and electrically connected to corresponding vertical bus bars, an electrically-insulative barrier encasing the horizontal bus bars with the surfaces of each bus bar being in surface-to-surface contact with the barrier, the barrier being substantially coextensive with the bus bars and consisting of a dielectric material having good heat transfer properties, the barrier comprising a sheet-like member on each side of the spaced bus bars which members have interfitting portions including a flange-receiving groove in one member and a flange in the other member and the interfitting portions extending between each pair of adjacent horizontal bus bars, the sheet-like members on opposite sides of the bus bars being substantially coextensive, the barrier having removable surface portions to provide access to effect connection of the horizontal bus bars with the vertical bus bars, the removable surface portions being aligned with the vertical bus bars, and mounting means for supporting the horizontal bus bars and comprising at least one aperture in each horizontal bus bar and a projection in at least one of the barrier members extending into the aperture of each bus bar.

4,199,656

DIGITAL VIDEO SIGNAL PROCESSOR WITH DISTORTION CORRECTION

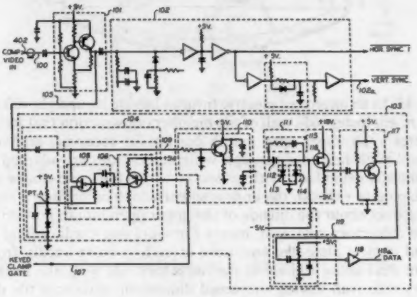
Richard Saylor, Monsey, N.Y., assignor to IDR, Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 611,843, Sep. 10, 1975, Pat. No. 4,042,958. This application Apr. 23, 1976, Ser. No. 679,909

Int. Cl.[2] H04J 3/00; H04L 1/00

U.S. Cl. 178—66.1 **42 Claims**

1. An apparatus for compensating for signal distortions in an input digital signal comprising a plurality of ones and zeros defining an information content for said input digital signal, said input digital signal having associated peak-to-peak signal levels, respectively, defining said ones and zeros wherein said signal distortions in said input digital signal comprise said respective peak-to-peak signal levels associated with at least some of said plurality of ones and zeros comprising said input digital signal differing from said respective peak-to-peak signal levels associated with others of said plurality of ones and zeros comprising said input digital signal, said peak-to-peak signal levels of said input digital signal resulting from zero-to-one and one-to-zero transitions in said input digital signal, said compensating apparatus providing a compensated output digital signal from said distorted input digital signal having the same information content as said input digital signal defined information content, said plurality of ones and said plurality of zeros comprising said compensation output digital signal all having the same respective peak-to-peak signal levels varying about a common base level, said compensating apparatus comprising means for tracking said zero-to-one and one-to-zero transitions in said input digital signal, first means operatively connected to said tracking means and responsive to each tracked zero-to-one transition in the peak-to-peak signal level of said input digital signal for clamping the level of said zero-to-one transition at a first predetermined signal level irrespective of any continued rise in said level of said distorted input digital signal zero-to-one transition and maintaining said clamped zero-to-one



transition at said first predetermined signal level until the presence of a subsequent one-to-zero transition in said distorted input digital signal is detected whereby said signal level becomes unclamped, said tracking means tracking said subsequent one-to-zero transition in said unclamped signal, and second means operatively connected to said tracking means and responsive to said tracked subsequent one-to-zero transition for said unclamped signal for reclamping the level of said tracked subsequent one-to-zero transition at a second predetermined signal level irrespective of any continued fall in said level of said distorted input digital signal subsequent one-to-zero transition until the presence of a subsequent zero-to-one transition in said distorted input digital signal is detected whereby said signal level of said reclamped signal again becomes unclamped, whereby said compensated output digital signal is provided from said distorted input signal.

4,199,657

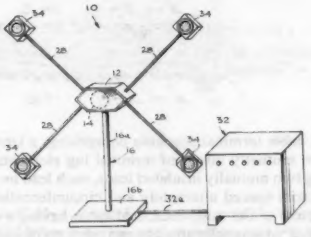
PLANAR SOUND REPRODUCING SPEAKER SYSTEM

Harvey Lane, 1046 E. Vernon, Los Angeles, Calif. 90011

Filed Jul. 21, 1978, Ser. No. 926,892

Int. Cl.[2] H04R 5/02, 1/02

U.S. Cl. 179—1 GA **4 Claims**



1. In a stereo speaker system, operable by way of a crossover circuit, comprising:

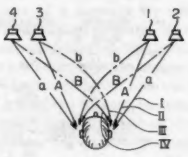
(a) an elongated stand;
(b) a housing of hexagonal configuration mounted on top of the stand;
(c) means for reproducing midrange frequency sound signals accommodated within the housing;
(d) a plurality of tubular sections mounted on and extending radially outward from the sides of the housing;
(e) a plurality of means for reproducing high frequency sound signals, mounted on the outer ends of the tubular sections, respectively;
(f) means for reproducing low frequency sound signals accommodated separately from the means for reproducing midrange and high frequency signal sounds;
(g) a crossover circuit wired for separating and delivering the appropriate range of frequencies to the means for reproducing the midrange, high and low frequency signal sounds, respectively.

4,199,658

BINAURAL SOUND REPRODUCTION SYSTEM

Makoto Iwahara, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 7, 1978, Ser. No. 940,361
Claims priority, application Japan, Sep. 10, 1977, 52-109175
Int. Cl.[2] H04R *5/04*
U.S. Cl. 179—1 G **7 Claims**



1. A binaural sound reproduction system comprising:
a pair of inner and outer rightward loudspeakers and a pair of inner and outer leftward loudspeakers, all of which are arranged such that their points of sound emission are equally aligned on a vertical rectilinear plane and the inner loudspeaker of each pair is horizontally inwardly spaced from the outer loudspeaker of the same pair in said vertical plane a distance which is equal to the distance between the respective ears of the human head;
a first crosstalk cancellation network connected between said outer rightward loudspeaker and said inner leftward loudspeaker;
a second crosstalk cancellation network connected between said inner rightward loudspeaker and said outer leftward loudspeaker; and
means for supplying right- and left-channel binaurally correlated signals to said inner rightward and leftward loudspeakers, respectively.

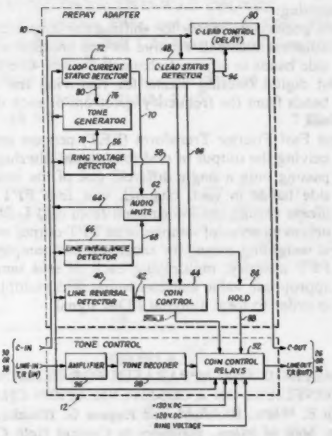
4,199,659

ELECTRONIC PREPAY ADAPTER CIRCUIT FOR CENTRAL OFFICE TELEPHONE EQUIPMENT

Alan J. Lischin, Lauderdale Lakes, Fla., assignor to Ceeco, Melrose Park, Ill.

Filed Aug. 17, 1978, Ser. No. 934,479
Int. Cl.[2] H04M *17/02*
U.S. Cl. 179—6.3 R **8 Claims**

1. An electronic prepay adapter for use in converting semi-postpay central office telephone equipment to full prepay operation, the semi-postpay central office equipment including central office battery supply connections, ringing power supply connections, collect and return power supply connections, control lead connections, and tip and ring leads, the prepay adapter and a coin control arrangement being connectable either between the first selector and line finder equipment of the central office equipment to control a plurality of pay station lines connected to the line finder equipment or between the line relay and the pay station tip and ring line pair to control a single pay station line, the prepay adapter equipment being connected to the central office battery supply connections and the control, tip and ring leads, the coin control arrangement being connected to the collect and return power supply connections and the tip and ring leads, the coin control arrangement including apparatus for selectively outputting the collect and return power supplies on the pay station line in response to a control input; the prepay adapter comprising:
means for detecting line polarity reversal during answer supervision;
means responsive to the control lead for detecting the placing of the controlled pay station line in an on-hook mode;
means responsive to said line polarity reversal detecting means and said on-hook detecting means for controlling the coin control arrangement over the control input,

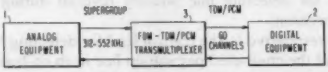


said controlling means comprising memory means being conditioned to a set to collect state after detection of said line polarity reversal, means responsive to said memory means for generating a collect signal to the coin control arrangement over the control input after detection of said on-hook mode and said memory means being in a set to collect state, and means responsive to said memory means for generating a return signal to the coin control arrangement over the control input after detection of said on-hook mode and said memory means being in a set to return state;
means for detecting a line imbalance condition on the pay station line during a reverse line polarity condition; and
means responsive to said line imbalance detecting means for selectively muting the audio path to the pay station line during a reverse line polarity condition, said audio path muting means being operable to mute the audio path until a line imbalance condition is detected.

4,199,660
FDM/TDM TRANSMULTIPLEXER

George D. Dill, Gaithersburg, Md.; Atsushi Tomozawa, Komae, Japan; James R. Fillion, Indialantic, Fla.; Mian Z. Ali, Gaithersburg, Md.; Clyde E. Burwell, Gaithersburg, Md.; Brady H. Warner, Jr., Gaithersburg, Md., and Richard W. Jones, Frederick, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Nov. 7, 1977, Ser. No. 849,584
Int. Cl.[2] H04J *1/00*
U.S. Cl. 370—50 21 Claims



1. An apparatus for converting L binary digital incoming channels, wherein the frequency spectra occupied by each channel includes multiple first and second side bands, to an L channel frequency division multiplexed (FDM) signal, said apparatus being of the type wherein a different first side band from each binary digital channel is selected by filtering, and the filtered signals are combined to form an FDM signal, comprising:

first positioning means for shifting the frequency spectra of adjacent channels relative to one another until the first side bands in adjacent channels are non-overlapping;

first digital filtering means for removing the second side bands from the frequency spectrum of each digital channel;

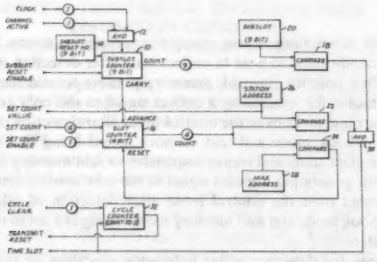
first Fast Fourier Transform (FET) process means for receiving the output of said first digital filtering means and passing only a single different one of the remaining first side bands in each channel, said first FFT processing means storing the information from said L filtered channels as an array of samples in an FFT output memory; and

first weighting means for receiving said samples from said FFT memory, multiplying each of said samples by an appropriate value and combining said multiplied samples in order to form a digital FDM signal.

4,199,661
METHOD AND APPARATUS FOR ELIMINATING CONFLICTS ON A COMMUNICATION CHANNEL

Philip E. White, Richfield, and Eugene G. Blumke, Bloomington, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed May 5, 1978, Ser. No. 903,345
Int. Cl.[2] H04Q *9/00*
U.S. Cl. 370—91 24 Claims

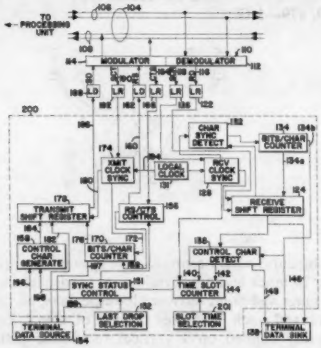


19. The method of allocating use of a communication channel shared by a plurality of stations, each station being capable of siezing use of the channel, each station containing counter means for storing a representation of the identity of one of the stations, said method comprising: providing the opportunity to seize use of the channel to the one station whose representation is stored in each of said counter means while simultaneously inhibiting all other stations from seizing use of the channel; independently and essentially simultaneously changing the representations in all of said counter means to a representation of the identity of another station; and essentially synchronizing the representations stored in all of said counter means when a station seizes use of the channel.

4,199,662
HYBRID CONTROL OF TIME DIVISION MULTIPLEXING

Charles S. Lowe, Jr., 809 Welcome Ct., Burnsville, Minn. 55337

Filed Jul. 17, 1978, Ser. No. 925,377
Int. Cl.[2] H04J *3/08, 3/12, 6/00*
U.S. Cl. 370—85 12 Claims



1. In combination with a communication system wherein a plurality of remote terminals time share at least one central station and are connected thereto over a common communications channel for the transmission of information therebetween, multiplexing means comprising:

(a) means at said central unit for initiating and transmitting a single status request command signal over said communications channel to said plurality of remote terminals;

(b) means at each of said terminals for generating a status response message and transmitting said status message over said communications channel to said central station;

(c) control means at each of said remote terminals for providing sequenced transmission of said status response messages to said central station, said control means including timing means responsive to said single status request signal to initiate transmision of said status message at a preselected time following receipt of said status request command signal;

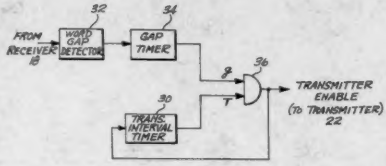
(d) means at said central station for initiating a stop command message for transmission over said common communications channel to said plurality of remote terminals in response to receipt at said central unit of a particular status message transmitted by at least one of said remote terminals; and

(e) means at each of said remote terminals for receiving said stop command messages and terminating the sequence transmission of said status response messages in response thereto.

4,199,663
AUTONOMOUS TERMINAL DATA COMMUNICATIONS SYSTEM

Hans K. Herzog, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 6, 1978, Ser. No. 957,743
Int. Cl.[2] H04J 6/02
U.S. Cl. 370—85 22 Claims



1. A method which permits each of a plurality of terminals to autonomously transmit messages on a data communication medium asynchronously with respect to any other of said plurality of terminals, said method comprising the steps, at each said terminal, of:

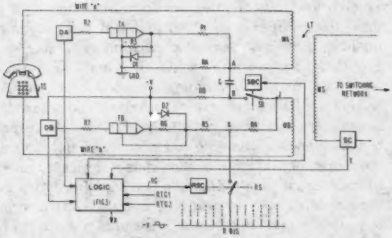
detecting the absence of messages on said data communication medium; and

enabling transmission of a message by said terminal only upon the occurrence of an absence of messages on said data communication medium whose duration substantially equals that of an inter-message gap unique to said terminal, and, the elapse of a transmission interval from a previous transmission of a message by said terminal, said transmission interval having a predetermined duration which is substantially the same for each said terminal.

4,199,664
TELEPHONE LINE CIRCUIT

Jean-Claude C. Grangé, Cagnes sur Mer; Philippe Hernandez, Nice; Daniel F. Reynés, Villeneuve Loubet; Jean-Pierre L. Suzzoni, Cros de Cagnes, and Nghiem H. Tu, LaGaude, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1978, Ser. No. 889,772
Claims priority, application France, Mar. 31, 1977, 77 10338
Int. Cl.[2] H04M 3/00
U.S. Cl. 179—18 FA 22 Claims



1. A telephone line circuit of the type which includes:

a telephone set,

a line transformer comprising first and second primary half-windings, and a secondary winding for connection to a switching network,

a d.c. voltage supply,

a ground terminal,

a first circuit branch connecting the first terminal of said telephone set to said ground terminal through intermediary of said first half-winding and a first resistor,

a second circuit branch connecting the second terminal of said telephone set to said voltage supply through intermediary of said second half winding and a second resistor,

a capacitor connected between the terminal of said first resistor opposite to that connected to ground and the terminal of said second resistor opposite to that connected to said voltage supply,

a ringing current circuit connected to a point in said second branch through intermediary of a bidirectional relay switch breaker in order to send two appropriate ringing half-waves,

said line circuit being characterized in that it includes:

a first detector connected to said first circuit branch including means sensitive to the current flowing through said first branch,

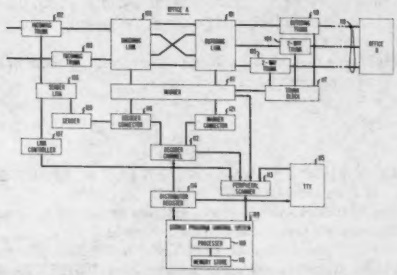
a second detector connected to said second circuit branch including means sensitive to the voltage present at said point, and

processing means sensitive to the detection signals provided by said first and second detectors in order to process said signals and give information about the on-hook/off-hook type status of said line circuit.

4,199,665
METHOD AND ARRANGEMENT FOR CONTROLLING TRAFFIC OVER TWO-WAY TRUNKS

Arthur J. Emrick, Gahanna, Ohio, and Arthur A. Maki, Claremont, Calif., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 1, 1978, Ser. No. 965,419
Int. Cl.[2] H04M 7/10
U.S. Cl. 179—18 AG 7 Claims



1. In a telephone switching office having two-way interoffice trunks connected to another office, a method of reserving the trunks at one office for calls incoming from the other office, characterized by the steps of

designating the number of two-way trunks to be reserved for incoming calls,

counting the number of idle two-way trunks in response to each outgoing call destined for said two-way trunks.

comparing the number of idle trunks with the designated number, and

establishing a connection for said outgoing call based on the result of the comparison.

4,199,666
STRAIGHT LINE TELEPHONE DIALER

Howard S. Davis, 30 Lantern La., Sharon, Mass. 02067

Filed Jul. 25, 1977, Ser. No. 818,406
Int. Cl.[2] H04M 1/31
U.S. Cl. 179—90 R 3 Claims

1. A telephone signaling mechanism comprising

(1) a panel having an elongate opening,

(2) a plate having a plurality of spaced apertures therein, each aperture being adapted to admit a finger tip,

(3) means mounting the plate for rectilinear sliding move-

ment relative to the panel with the plurality of spaced apertures accessible through the elongate opening when the plate is in an initial position,

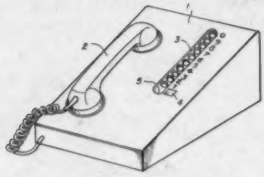
(4) a series of regularly spaced nodes on the plate aligned in the direction of sliding movement of the plate,

(5) means for restoring the plate to its initial position along a rectilinear path,

(6) a normally open switch,

(7) means on the plate for causing the normally open switch to close upon movement of the plate away from its initial position,

(8) a normally closed switch having a resilient arm carrying



pivoted means extending into the path of the nodes of the plate for engagement by each passing node, the pivoted means causing the normally closed switch to be momentarily opened upon the passage of each node in the direction to restore the plate to its initial position and enabling the nodes to pass in the opposite direction without appreciable flexure of the resilient arm,

(9) a pinion gear,

(10) a governor for controlling the speed at which the plate is restored to its initial position, the governor being connected to the pinion gear,

(11) and a rack on the slidable plate having its teeth in mesh with the teeth of the pinion gear.

4,199,667

MICROPHONE HAVING MEANS FOR SUPPRESSING STRUCTURE-BORNE SOUNDS

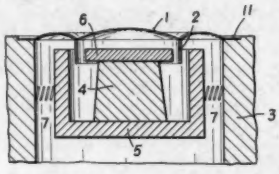
Heinz Renner, Vienna, Austria, assignor to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Austria

Filed May 23, 1978, Ser. No. 908,725

Claims priority, application Austria, May 26, 1977, 3764/77

Int. Cl.[2] H04R *1/02, 9/08, 19/04*

U.S. Cl. 179—121 R **11 Claims**



1. An arrangement for suppressing structure-borne sounds in microphones comprising an electroacoustic transducer which substantially includes a housing part, a diaphragm firmly connected to said housing and receiving the sound, and a corresponding transducer system and in which the electroacoustic conversion of the signal is based on the relative motion between said diaphragm and said transducer system, the natural resonance as well as the logarithmic decrement of said transducer system being at least approximately equal to the natural resonance and the logarithmic decrement of the diaphragm.

4,199,668

CIRCUIT ARRANGEMENT FOR SIGNAL EQUALIZATION IN WIDE-BAND TRANSMISSION SYSTEM

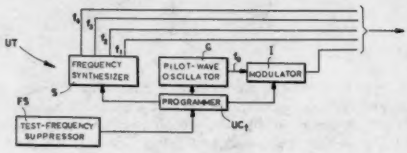
Giuseppe Scozzari, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Aug. 29, 1978, Ser. No. 937,814

Claims priority, application Italy, Sep. 1, 1977, 27175 A/77

Int. Cl.[2] H03H *7/36;* **H04B** *3/04, 3/46*

U.S. Cl. 179—175.3 R **6 Claims**



1. In a telecommunication system comprising a transmission line, a transmitter of wide-band message signals at one end of said line and a receiver for said message signals at the other end of said line, said message signals lying in a frequency range divided into a multiplicity of sub-bands separated from one another,

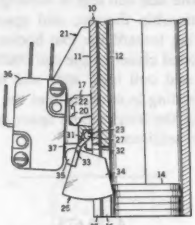
the combination therewith of a first oscillation generator at said one end adapted to produce a succession of test frequencies lying between said sub-bands, first programming means at said one end for actuating said first oscillation generator to emit said test frequencies over said line in a predetermined sequence, an equalizer at said other end divided into a plurality of stages individually adjustable to correct the level of incoming signals in respective frequency bands centered on said test frequencies, a second oscillation generator at said other end adapted to produce a succession of heterodyning frequencies each differing from a respective test frequency by a predetermined beat frequency, mixer means at said other end connected to receive said test frequencies from said line at a point downstream of said equalizer and said heterodyning frequencies from said second oscillation generator, second programming means at said other end synchronizable with said first programming means for actuating said second oscillation generator to produce said heterodyning frequencies concurrently with the arrival of the respective test frequencies whereby said beat frequency appears in the output of said mixer means, detector means connected to said output for producing a test signal proportional to the amplitude of said beat frequency, comparison means connected to said detector means and to a source of reference signal for generating a corrective signal, feedback means controlled by said second programming means for directing said corrective signal to the equalizer stage associated with the test frequency giving rise to said beat frequency, and suppressor means at said one end for selectively modifying the operation of said first programming means to skip certain of said test frequencies in said predetermined sequence, said second programming means being controlled by said detector means to modify said succession of heterodyning frequencies in substantial conformity with the sequence of arriving test frequencies.

4,199,669

COIN-SENSING ASSEMBLY

Carl L. Vogt, St. Louis, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Filed Feb. 21, 1978, Ser. No. 879,148
Int. Cl.[2] H01H *35/00*
U.S. Cl. 200—52 R **10 Claims**



4. In a coin-sensing assembly:

(a) housing means,

(b) tube means on the housing means for holding a supply of coins,

(c) a bracket mounted on the housing means,

(d) coin-sensing lever means pivotally mounted on the bracket, the lever means including a coin-engaging portion extending into the tube means for engagement with the coins held in the tube means, and

(e) switch means mounted on the bracket and including a resiliently actuated switch member engageable with the lever means and resiliently urging the lever means pivotally toward a first position upon disengagement of the coin-engaging portion with the coins in the tube means for conditioning the switch means for one operation, the lever means being pivotally movable to a second position upon engagement of the coin-engaging portion with the coins in the tube means for actuating the switch member and conditioning the switch means for another operation.

4,199,670

MANUALLY RE-SET INERTIA SWITCH ASSEMBLY

Nobuhiro Takeda, and Masaichi Hattori, both of Nagoya, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Aug. 18, 1978, Ser. No. 935,082
Claims priority, application Japan, Aug. 31, 1977, 52-115639[U]
Int. Cl.[2] H01H *35/14*
U.S. Cl. 200—61.45 R **6 Claims**

1. An electric circuit breaker for use in a motor vehicle and the like to instantaneously break an electric circuit, said electric circuit breaker comprising:

(a) a casing;

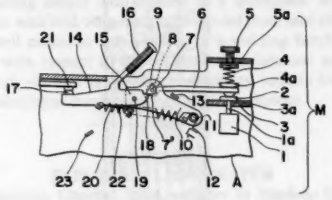
(b) an internal connecting member pivotally mounted on said casing, and urged in one direction with respect to a pivotal center and having a pivotal shaft extending therethrough;

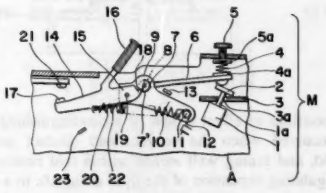
(c) a latching member mounted on an outer end of said pivotal shaft and located adjacent to said internal connecting member;

(d) a lever secured to said pivotal shaft at one end of said lever;

(e) an inertia body means located at the other end of said lever and held in a rest position by said lever, said lever being forced down by an urging means which is located above said inertia body means with said lever end interposed between said urging means and said inertia body means, said inertia body means operable to cause said lever end to move in an upward direction against said urging means thereby unlatching said latching member when vertical forces are applied to said inertia body means;

(f) an electrical connecting member pivotally mounted on one end of said internal connecting member, said electrical connecting member having a cut out portion at one end for engaging said latching member and having a movable electrical connecting portion at a second end, said engagement between said cut out portion of said electrical connecting member and said latching member being released whenever said inertia body means causes said latching





member to unlatch by moving the other end of said lever in an upward direction;

(g) a fixed electrical connector mounted on said casing for closing the circuit when said electrical connecting member is latched so that said moveable electrical connecting portion at said second end of said electrical connecting member contacts said fixed electrical connector; and

(h) a handle connected to said electrical connecting member for manually re-engaging said electrical connecting member and said latching member after said electric circuit breaker has been tripped.

4,199,671

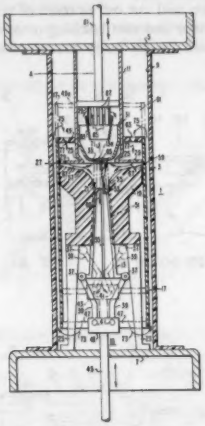
PUFFER CIRCUIT BREAKER

Howard C. Ludwig, Forest Hills Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 30, 1978, Ser. No. 873,330
Int. Cl.[2] H01H *33/88*
U.S. Cl. 200—144 R **8 Claims**

1. A puffer interrupter comprising an elongated insulating casing having a first end wall and an oppositely disposed second end wall, the casing and the walls forming a chamber containing an arc-extinguishing fluid, a generally tubularly shaped stationary contact structure within the chamber and comprising a conductor tube extending from the first end wall, a movable contact aligned with the stationary contact structure and movable between open and closed positions with the conductor tube, a stationary annular insulating nozzle having a bore within which the movable contact is mounted, the nozzle walls forming the bore comprising a throat of reduced cross-section and having an outwardly flared end surface spaced from and facing the first end wall, an elongated cylinder within the chamber and around said contact structure and the nozzle, the nozzle being in fluid-tight contact with the cylinder, the cylinder surrounding said contact structure having an inturned annular portion in fluid-tight contact with said contact structure, the cylinder and said contact structure forming an annu-

lar compartment for containing the arc-extinguishing fluid and extending from said annular portion to said flared end surface, the cylinder being movable between positions relatively near and away from the first end wall corresponding respectively to the closed and open positions of the contact and contact structure, means for moving the contact and the cylinder between



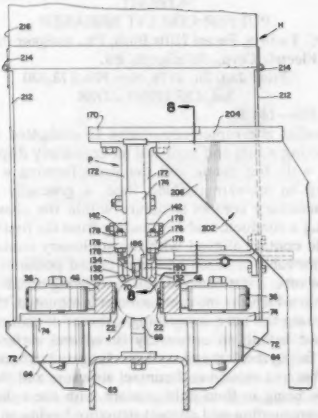
said positions to effect a flow of arc-extinguishing fluid at an arc incurred when the contact and contact structure are opened, and tuning wall means within said contact structure for regulating expansion of the fluid at the arc to a ratio of the downstream pressure to the upstream pressure and comprising a piston adjustably mounted within the conductor tube.

4,199,672

APPARATUS FOR CURING COATINGS ON WELDED LONGITUDINAL SEAMS OF CAN BODIES

Carl V. Sword, 1322 Evergreen Rd., Homewood, Ill. 60430; Frank E. Halicki, 10609 S. Keeler Ave., Oak Lawn, Ill. 60453, and Edward G. Geiss, 9020 S. 84th St., Hickory Hills, Ill. 60457

Filed Nov. 10, 1977, Ser. No. 850,349
Int. Cl.[2] H05B *9/02, 5/08*
U.S. Cl. 219—9.5 **5 Claims**



1. Apparatus for heating welded longitudinal seams on can bodies for curing coatings applied to the seams, said apparatus comprising:

an elongated split return induction coil having center and opposite side legs and being longitudinally separated into short and long coil sections, said coil legs having facing surfaces which face toward can bodies to be heated; elongated spacers of dielectric material positioned between said center and side coil legs in nonengaging transversely-spaced relationship thereto, said spacers having spacer surfaces facing toward the can bodies to be heated and being positioned closer to the can bodies than said facing surfaces of said coil legs; and, said spacers and spacer surfaces extending in straight lines the length of said coil and spanning the longitudinal space between said short and long coil sections.

4,199,673

WELDING-DEVICES FOR OPERATING IN EXIGUOUS SPACES

Albert J. Thiébaut, 92, Avenue de Verdun, Romainville (Seine-Saint-Denis), France (93230), and Maurice Boeil, 8, rue des Villarmains, Saint-Cloud (Hauts-de-Seine), France (92210)

Filed Nov. 17, 1977, Ser. No. 852,522
Claims priority, application France, Nov. 22, 1976, 76 35051
Int. Cl.[2] B23K *37/04*
U.S. Cl. 219—60 A **9 Claims**

1. A welding device for operating in exiguous spaces, particularly for butt-joint welding parts such as tubes, said device comprising:

a support member;

a rotor mounted on said support member for rotation about an axis;

a rocking lever pivotally mounted on said rotor for rotation therewith;

a welding electrode mounted on said rocking lever for rotation therewith;

said rocking lever being pivotable such that said electrode is moved substantially radially with respect to said rotor between a welding position and a non-welding position;

a connecting member having a first end wound about the periphery of said rotor and a second end;

means, supported by said support member and fixed to said second end of said connecting member, for causing said connecting member to move in a direction to be unwound from said rotor, and for thereby causing said rotor and said electrode to rotate about said axis;

a control cable extending through said connecting member, throughout the entire length thereof, said control cable having a first end connected to said rocking lever and a second end; and

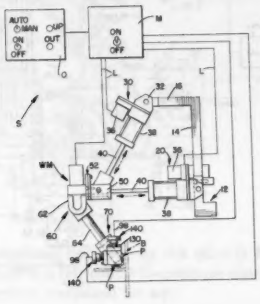
lever control means connected to said second end of said control cable for selectively operating said cable and thereby pivoting said rocking lever and moving said electrode between said welding and non-welding positions thereof.

4,199,674

WELD HEAD CONTROL AND GUIDANCE SYSTEM

Paul D. Keser, Galesburg, and Gerald E. McAlister, St. Augustine, both of Ill., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Dec. 26, 1978, Ser. No. 973,450
Int. Cl.[2] B23K 9/12
U.S. Cl. 219—124.34 4 Claims



1. A non-contact proximity sensor unit for positioning a welding torch or the like at a desired standoff distance from electrically conductive workpieces, the proximity sensor unit comprising:

a pair of non-contact proximity sensors for sensing the proximity of a workpiece, said proximity sensors having means for generating a signal based on the electrical conductivity of a workpiece, one sensor of said pair of sensors generating a signal in accordance with the vertical distance between said one sensor and a workpiece, and the other sensor of said pair of sensors generating a signal in accordance with the horizontal distance between said another sensor and a workpiece;

proximity sensor mounting means for mounting said proximity sensors adjacent a workpiece, said proximity sensor mounting means including a spring located in each of a pair of mounting bores and biasing each of said proximity sensors outwardly of said proximity sensor mounting bores, a pair of hold-down plates mounted on said mounting block, each plate covering a proximity sensor receiving bore to hold said spring biased proximity sensor in said bore, each plate having a threaded bore defined therein, a proximity sensor position adjusting threaded tube threadably mounted in each hold-down plate threaded bore to have one end thereof contacting the proximity sensor located within the mounting block proximity sensor receiving bore covered by the hold-down plate and another end thereof extending outwardly of said threaded bore, a thumbscrew mounted on each threaded tube at said another ends thereof for moving said threaded tubes into and out of said proximity sensor receiving bores via said hold-down plate threaded bores so that the proximity sensor mounted in said proximity sensor receiving bore is moved inwardly and outwardly of said proximity sensor receiving bore against the bias of said spring because of the contact between said threaded tube one end and said proximity sensor so that position of said proximity sensors with respect to a workpiece can be adjusted in situ;

electrical control means connected to said proximity sensors to receive a signal generated by said proximity sensors, said electrical control means including an output signal generating means for generating a control signal in accordance with a signal received from said proximity sensors;

torch mounting means for movably mounting a welding torch or the like, said torch mounting means including a mounting plate pivotally attached to said proximity sensor mounting block, said torch mounting means including a pivot pin pivotally mounting said mounting plate to said proximity sensor mounting block, said mounting plate having an arcuate slot defined therein, a pin affixed to said proximity sensor mounting block and received in said arcuate slot for controlling movement of said mounting plate, and a torch collar attached to said mounting plate and mounting a torch in a plane which is essentially parallel to a plane containing said proximity sensors;

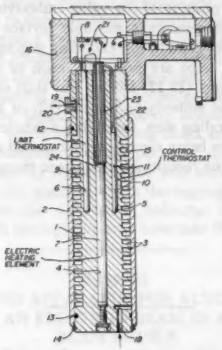
torch position control means connected to said electrical control means to receive said output signal therefrom, said torch position control means being connected to said torch mounting means to control position of said torch mounting means with respect to a workpiece in accordance with said output signal received from said electrical control means so that position of a welding torch or the like with respect to a workpiece is maintained and controlled via said non-contact proximity sensors based on the electrical conductivity of such workpiece.

4,199,675

ELECTRIC FLUID HEATER

John Sharpless, Oberlin, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Jun. 23, 1977, Ser. No. 809,511
Int. Cl.[2] H05B 1/02; F24H 1/12
U.S. Cl. 219—305 11 Claims



1. A heater for liquid moving in a conduit comprising:

a heater body having an elongated liquid passage said liquid passage having an inlet, an upstream portion, a downstream portion and an outlet in series flow relationship;

a heating element associated with said heater body and effective to directly heat liquid in substantially only the upstream portion of the passage;

temperature responsive control means for controlling operation of the heating element, said means being responsive to a pre-selected temperature primarily associated with the temperature of the liquid at the most downstream part of said directly heated upstream portion of the liquid passage proximate the point in the passage where the liquid exhibits its greatest temperature variation under constant flow rate conditions;

said downstream portion of said passage being substantial in size and being in indirect heat conductive heat exchange relationship with said directly heated upstream portion, said downstream portion being an integral part of the heater body, being in heat exchange relationship with the liquid passing through it, and having a thermal mass in conductive heat exchange relationship with said downstream portion of sufficient size to damp temperature cycling variations of overshoot and undershoot at the outlet of the passage.

4,199,676

ENCODER

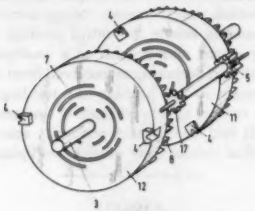
Hellmut Heuer, Lee 4,, 2000 Wedel, Fed. Rep. of Germany

Filed Jan. 30, 1978, Ser. No. 873,236

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1977, 7703216[U]

Int. Cl.[2] **G06M** *1/00;* **G06C** *27/00;* **G06F** *7/38*

U.S. Cl. 235—61 PD **6 Claims**



1. In a mechanical encoder having a cascaded plurality $(x-x_n)$ of drivingly connected, repetitiously movably positionable value embodying carriers with encoding step markings, said encoding step markings being suitable for operation by sensing apparatus for the production of output signals corresponding to the position of the value embodying carriers, the improvement wherein, on a movable surface of each value embodying carrier (**11,12**), (m) encoding step markings sets (**7**) of (n) encoding steps are provided, each of $(x-x_{n-1})$ value embodying carriers (**11,12**) having (m) shift elements (**4**) for driving the value embodying carrier (**12**) of higher position value by an encoding step, (m) being a whole even number, said shift elements being symmetrically spaced on said carriers with respect to the repetitious movement thereof.

4,199,677

RECORD DECODING SYSTEM AND METHOD UTILIZING LOGARITHMIC TECHNIQUES

James L. Vanderpool, Centerville, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 758,152, Jan. 10, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,264

Int. Cl.[2] **G06K** *7/10;* **G08C** *9/06;* **G11B** *5/09*

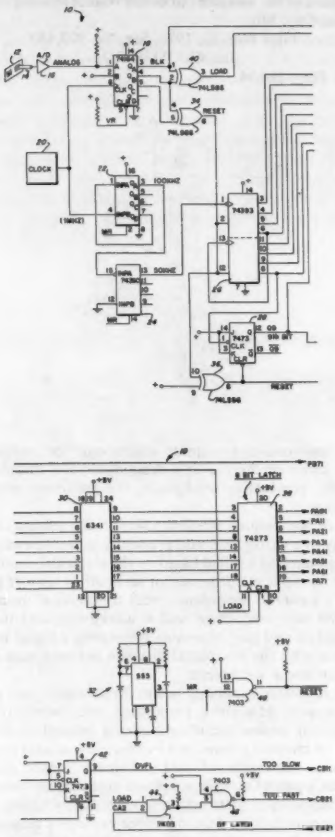
U.S. Cl. 235—463 **21 Claims**

1. A system for reading a record encoded with a plurality of coded areas having at least two predetermined widths, comprising:

means for scanning said record and for providing a binary signal representative of the width of each of the individual areas scanned;

means responsive to said binary signal for providing a second binary signal representative of the logarithm of the width of each of the individual areas scanned, each of said signals having a predetermined maximum value, said logarithms having a predetermined base having a value predeterminedly related to said maximum value in order to provide optimum resolution of said widths; and

digital processing means coupled to said scanning and providing means and responsive to differences in the logarithm representative signals for decoding said encoded record.



4,199,678

ASYMMETRIC TEXTURE SENSITIVE X-RAY POWDER DIFFRACTOMETER

Joshua Ladell, Monsey, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

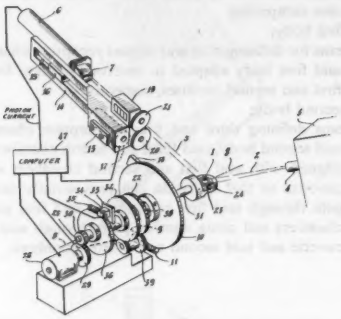
Filed Jan. 31, 1979, Ser. No. 7,880

Int. Cl.[2] **G01N** *23/20*

U.S. Cl. 250—272 **6 Claims**

1. A diffractometer comprising a source of X-radiation, a support for positioning a disc-shaped specimen in the path of X-radiation from said source and rotatable about a given axis normal to the surface of the specimen, a detector positioned to receive X-rays diffracted by said specimen, means to rotate the specimen an angle α from the symmetric position in which the specimen surface normal makes the angle $(90-\theta)°$ with both the source-to-specimen and detector-to specimen directions in the plane formed by the incident and diffracted beams such that the specimen normal remains in the plane, slide means for supporting the detector for rectilinear movement towards or away from the specimen, means to move the detector step-wise towards or away from the specimen while constraining the ratio K of the detector-to-specimen and X-ray source-to-speci-

men distance, means to rotate the slide about the specimen, and means for maintaining $K=\sin(\theta+\alpha)/\sin(\theta-\alpha)$ where θ is the Bragg diffraction angle, while modifying the measured intensity by multiplying its value by $0.5(K+1)K^{0.75}\exp[\mu R(K-1)]$, where R is the source-to-specimen distance and μ, the linear absorption coefficient for air.

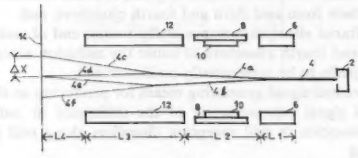


4,199,679

METHOD AND APPARATUS FOR THE SEPARATION OF ISOTOPES

Aviv Ami-Rav, 6 Zahal Str., Givatayim, Israel

Filed Nov. 22, 1976, Ser. No. 743,757
Claims priority, application Israel, Nov. 27, 1975, 48553
Int. Cl.² G01N 27/78; H01S 9/00
U.S. Cl. 250—251 **26 Claims**



1. A method for the separation of isotopes comprising the steps of:

producing at least one supersonic paramagnetic or polar particle beam of an isotopic mixture;

changing the distribution of the m_j values in said particle beam to form at least one beam having discrete m_j value or values, where m_j is the projection of the angular momentum of a particle in the direction of the applied magnetic field; or the projection of the rotational angular momentum of a polar molecule in the direction of the applied electric field;

traversing said beam through a magnetic or electric field while subjecting said beam to at least one field oscillating in the E.S.R. and/or N.M.R. and/or Stark resonance frequency or frequencies of at least one of the isotopes contained in said beam in order to cause an optimal maximum number of particles of a desired isotope to resonate as a result of the combined effect of said fields;

separating the isotopes which have undergone resonance absorption or emittance from the isotopes which have not undergone resonance absorption or emittance by means of an inhomogeneous magnetic or electric field gradient; and,

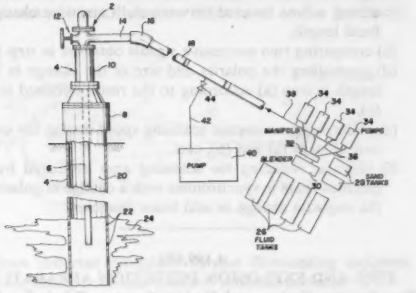
collecting the separated isotopes by means of a collector.

4,199,680

METHOD OF TREATING AND LOGGING WELLS

Keith E. Moon, Odessa, Tex., assignor to Cardinal Surveys Company, Odessa, Tex.

Filed Nov. 14, 1977, Ser. No. 851,097
Int. Cl.² G01V 5/00
U.S. Cl. 250—260 **12 Claims**



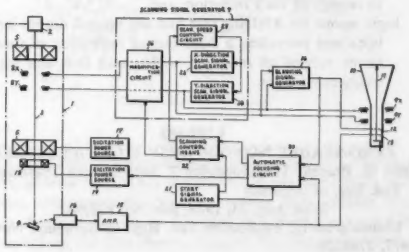
1. A method of recording the effect of stimulating a well drilled into the earth's strata, comprising the steps of: recording the existing radiation within the well to form a base gamma-ray log; pumping fracturing liquids through a line leading into the well to fracture the strata and stimulate the flow of fluids trapped in the earth's strata; injecting a tagging agent of a radioactive material and an ion exchange resin into the fracturing fluids; the tagging agent being injected into the line downstream of where the fracturing fluids are being pumped to prevent contamination of the pumping apparatus; and recording a gamma-ray reading of the well after fracture of the strata to locate the position where the tagging agent has been deposited within the well which indicates the entry of the fracturing fluids through the well bore into the strata.

4,199,681

METHOD AND APPARATUS FOR AUTOMATICALLY FOCUSING AN ELECTRON BEAM IN A SCANNING BEAM DEVICE

Takao Namae, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 949,430
Claims priority, application Japan, Oct. 18, 1977, 52-124791
Int. Cl.² G01M 23/00
U.S. Cl. 250—311 **3 Claims**



1. A method for automatically focusing an electron beam on a specimen using a scanning device having an electron beam source, a condenser lens system for focusing the electron beam on the specimen, a scanning means for scanning the electron beam over the specimen, a detecting means for detecting the signal emanating from the specimen resultant upon electron beam irradiation, and a display means for displaying the speci-

men image on a display device by using the output signal of said detecting means to modulate the scanning beam of the display device which is in synchronism with said scanning means, said method comprising the steps for:

(a) repeatedly changing the condenser lens system focal length stepwise in synchronism with said scanning means,

(b) converting the output of said detecting means into a signal corresponding to the diameter of said electron beam during a time interval between each stepwise change of focal length,

(c) comparing two successive signals obtained in step (b),

(d) controlling the polarity and size of the change in focal length in step (a) according to the result obtained in step (c),

(e) maintaining a constant scanning speed during the execution of steps (a) and (b), and

(f) stepwise reducing the scanning area irradiated by the electron beam in synchronism with a change in polarity of the stepwise change in said beam diameter.

4,199,682

FIRE AND EXPLOSION DETECTION APPARATUS

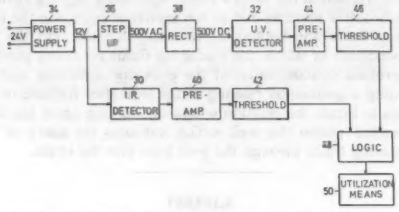
Dov Spector, Savion, and Yechiel Spector, Zahala-Tel-Aviv, both of Israel, assignors to Spectronix Ltd., Tel-Aviv, Israel

Filed May 3, 1978, Ser. No. 902,609

Claims priority, application Israel, Feb. 27, 1978, 54137

Int. Cl.[2] G01J *1/00, 1/42*

U.S. Cl. 250—339 **5 Claims**



1. Fire and explosion detection apparatus comprising:

a first detector for sensing radiation within a first frequency range excluding radiation in the visible spectrum and providing a first output indication in response to receipt of such radiation;

a second detector for sensing radiation within a second frequency range excluding radiation in the visible spectrum and providing a second output indication in response to receipt of such radiation; and

logic means for ANDing said first and second output indications and providing a third output indication of simultaneous receipt of radiation within said first and second frequency ranges.

4,199,683

ZERO-STABLE NONDISPERSIVE GAS ANALYZER

Otto H. Blunck, Trelleborgallee 2, 2400 Lubeck-Travemunde, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 936,062

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749229

Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—345 **23 Claims**

1. A nondispersive infrared gas analysis device comprising the combination of

first and second gas-containing cuvettes adapted, respectively, to contain a gas to be analyzed and a reference gas, said cuvettes having radiation transparent means at both ends thereof;

a source of radiation coupled to said transparent means at one end of the cuvettes to pass radiation thereto;

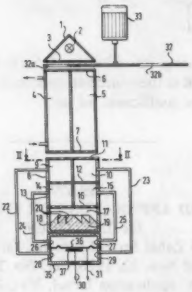
receiver means at the other end of said cuvettes for receiving radiation emanating from said cuvettes, said receiver means comprising

a first body;

means for defining first and second reception chambers in said first body adapted to receive radiation from said first and second cuvettes, respectively;

a second body;

means defining third and fourth reception chambers in said second body, said third and fourth chambers being aligned with said first and second chambers and said cuvettes so that radiation can pass serially along one path through said first cuvette and said first and third chambers and along another path through said second cuvette and said second and fourth chambers;



window means for covering the ends of said reception chambers and for separating said first and second chambers from said third and fourth chambers; and

infrared absorption means at the output end of said third and fourth chambers to cause the radiation along said paths to be substantially unidirectional;

differential signal generating means for producing an electrical signal representative of the difference in radiation absorption in said reception chambers along said paths; and

means for coupling said reception chambers to said differential signal generating means;.

and wherein said first and second bodies are formed from materials having different thermal conductivity characteristics.

4,199,684

METHOD FOR THE DETERMINATION OF THE ELECTRON DENSITY IN A PART VOLUME

Ib Leunbach, Vanlose; Kim Demandt, Naerum, and Ottar Skilbreid, Lyngby, all of Denmark, assignors to Scadera A/S, Vedbaek, Denmark

Filed Jun. 12, 1978, Ser. No. 914,451

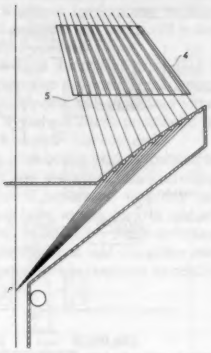
Claims priority, application Denmark, Jun. 29, 1977, 2900/77

Int. Cl.[2] H01J *35/00*

U.S. Cl. 250—402 **5 Claims**

1. An X-ray tube for use in determining the electron density in a part volume from the scattering of X-rays received from several directions, said X-ray tube comprising a cathode, an anode which is symmetrical with respect to rotation about a predetermined axis and is positioned to receive a beam of electrons from said cathode, and means for causing the electron beam both to scan the anode in a radial direction with respect to said axis and to rotate about said axis, and wherein said anode is formed in the radial direction with steps, each step having a first surface which is directed towards the cath-

ode deflection point or a point behind the cathode deflection point and a second surface which extends transversely of said



first surface, whereby electrons are received by the anode on said second surfaces predominantly.

4,199,685

LASER BEAM ACTIVATED ION SOURCE

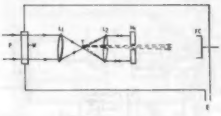
Heinrich Hora; John L. Hughes; John C. Kelly, and Barry Luther-Davies, all of Box 1 Post Office, Kensington, N.S.W. 2033, Australia

Filed Apr. 14, 1977, Ser. No. 787,421

Claims priority, application Australia, Apr. 15, 1976, PC5614

Int. Cl.[2] H01J *27/00*

U.S. Cl. 250—423 P **11 Claims**



1. Apparatus for generating energetic ions of a target material from a cold plasma of said material comprising means for producing and directing a pulsed laser beam onto said target material to produce said cold plasma, the said beam having an intensity greater than $C\omega^2$ watts cm^{-2} where C is a constant equal to 3×10^{-17} watts $cm^{-2}sec^{+2}$ and $\omega=2\pi f$ where f is the frequency of the light of the laser beam, the pulse rate of the laser beam being such that the pulses are short in relation to the collision time in said plasma whereby the threshold of operation of nonlinear electrodynamic forces within said plasma is achieved, said forces acting to accelerate and eject ions from said plasma, means defining an evacuated chamber containing said target material, and optical means for focussing said laser beam onto said target material.

4,199,686

DARK FIELD ILLUMINATOR AND COLLECTOR APPARATUS AND METHOD

Albert Brunsting, Miramar, and Walter R. Hogg, Dade County, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jul. 31, 1978, Ser. No. 929,267

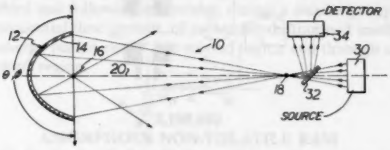
Int. Cl.[2] G01J *1/58*; G01N *21/38, 21/00, 33/16*

U.S. Cl. 250—459 **27 Claims**

1. An illuminator and collector apparatus for fluorescence analysis wherein irradiation of a stream of particles by illuminating radiation stimulates detectable fluorescent radiation, comprising:

a reflector having a concave reflector surface with a first focus and a second focus, said first focus being positioned in intersecting relationship with the stream of particles;

illuminating means for impinging organized illuminating radiation upon said concave reflector surface so that the illuminating radiation is convergent upon said first focus after reflection from said concave reflector surface, whereby the particles are illuminated at the first focus



from different directions by the illuminating radiation proceeding from said concave reflector surface;

radiation separating means for separating the fluorescent radiation reflected off said concave reflector surface from the illuminating radiation directed toward said concave reflector surface, whereby the fluorescent radiation emanates from said first focus, reflects from said concave reflector surface so as to be focused on said second focus and is separated from the illuminating radiation for subsequent detection.

4,199,687

SHEET FILM CHANGER

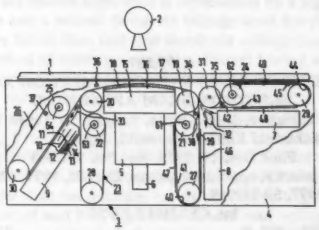
Rudolf Brendl; Johann Finkenzeller; Harry Kirsch, and Karl Weiss, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 933,076

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739244

Int. Cl.[2] G03B *41/16*

U.S. Cl. 250—468 **15 Claims**



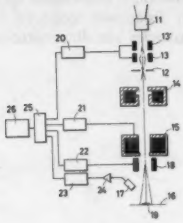
1. A sheet film changer comprising a photographic exposure station, at least one supply magazine for the film sheets, two discrete, synchronously driven conveyor belts, guided over rollers, disposed one above the other at a sheet transport path for conveying the film sheets, clamped between them, from a receiving location associated with the supply magazine, to a photographic exposure station, and to a release location, characterized in that the two conveyor belts (23,26) for the purpose of combination with a fluoroscopy installation (5, 6, 15, 16), are readily capable of irradiation, and are provided with intensifier foils (46, 47, 48, 49) only at sections which are matched in their dimensions to the maximum photographic exposure format.

4,199,688

APPARATUS FOR ELECTRON BEAM LITHOGRAPHY

Susumu Ozasa, Kashiwa, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 21, 1978, Ser. No. 962,768
Claims priority, application Japan, Nov. 24, 1977, 52-139941
Int. Cl.[2] A61K *27/02*
U.S. Cl. 250—492 A **7 Claims**



1. In an apparatus for electron beam lithography, wherein an electron beam is uniformly projected onto a reference aperture plate having an opening of a prescribed shape and has a cross-sectional shape of the opening of the aperture plate, and is concentrated and then projected onto a specimen, to thereby process a microscopic pattern in the specimen;

an apparatus for electron beam lithography comprising:

electron beam-deflecting means for periodically changing the direction of travel of the electron beam disposed between an electron gun emitting said electron beam and said reference aperture plate;

means for detecting the deviation of the position of the final-image electron beam corresponding to the angle of deflection of the electron beam caused by said electron beam-deflecting means; and

means for adjusting the focal length of a final-stage electron lens, so as to minimize positional deviation of said beam and thereby focus the projected electron beam.

4,199,689

ELECTRON BEAM EXPOSING METHOD AND ELECTRON BEAM APPARATUS

Tadahiro Takigawa, Inagi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 19, 1978, Ser. No. 971,043
Claims priority, application Japan, Dec. 21, 1977, 52-154090; Dec. 27, 1977, 52-159919
Int. Cl.[2] H01J *37/00*
U.S. Cl. 250—492 A **12 Claims**

1. Electron beam exposing apparatus comprising;

an electron gun for emitting an electron beam,

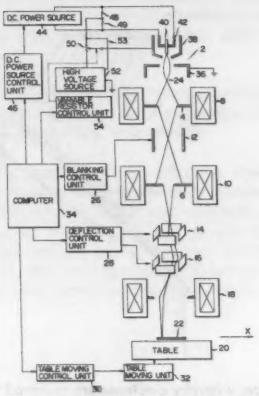
an electron lens system for focussing an electron beam,

a table means on which an object to be exposed by an electron beam is placed,

blanking means for selectively preventing passage of the electron beam to permit the electron beam to be selectively exposed onto the object on the table,

deflection means for deflecting the electron beam in a predetermined direction to cause it to be directed to a predetermined area of the object,

means for controlling the electron gun to cause the diameter of an electron beam at a crosspoint which is emitted from the electron gun to be varied to a predetermined value, and



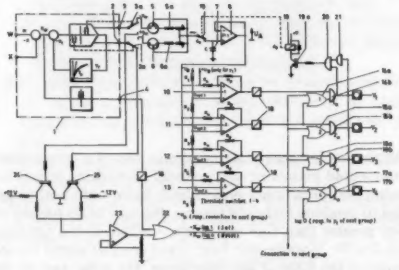
means for designating the value of a diameter of the electron beam to said control means according to the area of a pattern to be described on the object.

4,199,690

CONTROL SYSTEM FOR ACTUATORS WHICH CAN BE SEPARATELY ENERGIZED AND DEENERGIZED

Frank Meyer, Dieburg, Fed. Rep. of Germany, assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed Aug. 15, 1977, Ser. No. 824,638
Int. Cl.[2] G05D *23/00*
U.S. Cl. 307—41 **8 Claims**



1. Control apparatus for controlling a plurality of actuators which may be individually energized and deenergized for controlling an external system such as a heating system, said apparatus having a three position controller and a two position controller, each responsive to deviations between an input setpoint and a measured value of said external system, said apparatus comprising:

(a) capacitor means for integrating outputs of said three position controller, said three position controller providing outputs for charging and discharging said capacitor means in response to positive and negative deviations between said setpoint and measured value,

(b) a plurality of threshold switches, one threshold switch corresponding to each of said plurality of actuators,

(c) means for interconnecting said threshold switches and said capacitor means in circuit for controlling said actuators for energization and deenergization in response to the amount of charge on said capacitor means,

(d) said three position controller providing a first output in

response to positive deviations between said setpoint and measured value in accordance with a first hysteresis curve and a second output in response to negative deviations between said setpoint and measured value in accordance with a second hysteresis curve,

(e) said two position controller providing first and second outputs in response to positive and negative deviations between said setpoint and measured value in accordance with a third hysteresis curve positioned between said first and second hysteresis curves, and

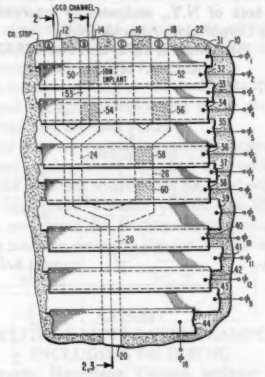
(f) logic means connecting said outputs of said two position controller to said actuators for controlling at least one of said plurality of actuators, whereby said two position controller and logic means control said at least one actuator in response to relatively small deviations and said three position controller and said capacitor means control said plurality of actuators in response to relatively large deviations.

4,199,691

CCD MULTIPLE CHANNEL NETWORK

Rodney L. Angle, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,079
Int. Cl.[2] G11C *19/28;* H01L *29/78;* H03K *5/00*
U.S. Cl. 307—221 D **12 Claims**



1. A charge-coupled device (CCD) comprising:

a semiconductor substrate;

first and second substantially parallel channels in said substrate, extending in a given direction, each channel comprising a substrate region and means creating potential barriers which define the opposite edges of each channel;

a plurality of electrodes common to said channels extending in a direction which is generally transverse to said given direction, said electrodes being insulated from the channels and being responsive to applied potentials for producing parallel wells in the channels for the storage in and propagation of charge along the respective channels, said electrodes including first, second and third adjacent electrodes, arranged in that order;

first and third potential barrier regions in said first channel, beneath said first and third of said electrodes, respectively, each said region having an impurity concentration such that the potential barrier created is lower than the potential barrier defining the channel edges, said first and third electrodes being spaced from one another by the intervening second one of said electrodes;

a second region in said first channel beneath said second electrode, said second region comprising a normal channel region and being located between said first and third potential barrier regions;

fourth, fifth and sixth normal channel regions, in said second channel, beneath said first, second and third electrodes, respectively; and

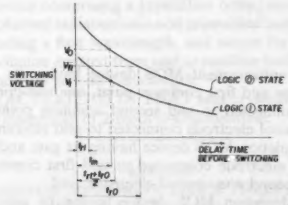
means for applying multiple-phase voltages to said first, second, third and following electrodes, during one group of sequential time periods, of values for shifting one charge packet, when present in said second channel through said fourth, fifth and sixth regions, and for concurrently shifting another charge packet, when present in said first channel, from said first to said second region and trapping the same in said second region, and for then applying multiple-phase voltages to said first, second, third and following electrodes, during a second group of sequential time periods, of values for shifting said another charge packet out of said second region and through said third region.

4,199,692

AMORPHOUS NON-VOLATILE RAM

Ronald G. Neale, Indian Harbour Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed May 16, 1978, Ser. No. 906,381
Int. Cl.[2] H01L *27/24*
U.S. Cl. 307—238 **13 Claims**



1. In an amorphous memory device having a first logic state represented by a high resistance state and a first threshold voltage level for electrical conduction, the method of storing a second logic state in said device comprising applying a voltage across the device sufficient to cause conduction and crystal growth and terminating said voltage before sufficient crystal growth occurs to create a low resistance state in said device whereby said second logic state is represented by a high resistance state and a second threshold voltage level for electrical conduction lower than said first threshold voltage level.

5. A method of reading a memory element having at least a first and second logic state, represented by a first and second threshold voltage level for conduction, respectively, wherein each logic state has a high resistance state comprising:

applying a read voltage pulse across said element for a duration greater than the duration for element switching and conduction of said second logic state at said read voltage and less than the duration for element switching and conduction of said first logic state at said read voltage; and

monitoring an electrical characteristic of said element during said read voltage pulse at a time greater than the duration for element switching and conduction of said second logic state.

4,199,693

COMPENSATED MOS TIMING NETWORK

Alton W. Bennett, Carlsbad, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 7, 1978, Ser. No. 875,783
Int. Cl.[2] H03K *1/02, 3/353*
U.S. Cl. 307—246 **5 Claims**

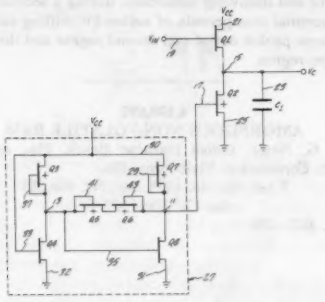
1. An MOS circuit comprising:

a depletion MOS device having its first non-control electrode connected to a reference voltage and its gate and

second non-control electrode connected to a first common point;

an enhancement MOS device having its gate electrode connected to said first reference voltage, a first non-control electrode connected to said first common point and a second non-control electrode connected to a reference point;

a second depletion MOS device having is first non-control electrode connected to said reference voltage and its gate and second non-control electrode connected to a second common point;



a second enhancement MOS device having its gate connected to said first common point, one non-control electrode connected to said second common point and one non-control electrode connected to said reference point;

a third depletion MOS device having its gate and one non-control electrode connected to said first common point, and a second non-control electrode; and

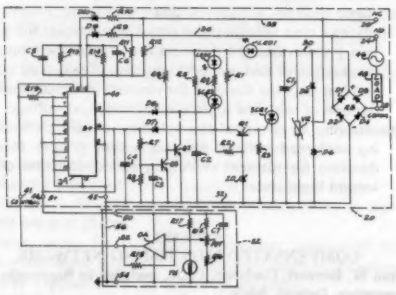
a fourth depletion MOS device having its gate and one non-control electrode connected to said second common point and its second non-control electrode connected to the second non-control electrode of said third depletion MOS device.

4,199,694

TERMINAL CONVERTIBLE ALTERNATING CURRENT SWITCH

Donald L. Van Zeeland, Franklin, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 14, 1978, Ser. No. 933,511
Int. Cl.[2] H03K *17/72, 17/02*
U.S. Cl. 307—252 J **9 Claims**



1. A terminal convertible electric switch providing either "normally open" or "normally closed" operating states, in combination:

(a) first and second A.C. terminals

(b) a third common A.C. terminal

(c) means connected to said first and second terminals and said third terminal and providing alternative first and second rectified unidirectional potentials whenever an A.C. source is connected between said third terminal and either of said first and second terminals

(d) signal gating means having input terminals connected to the first mentioned means, a D.C. signal input terminal, and a D.C. output terminal that goes from a low to high potential state whenever said D.C. signal input terminal goes from a low to a high potential state and said first unidirectional potential is present, and conversely goes from a high to a low potential state when said second unidirectional potential is present when the aforementioned change in potential state occurs at said D.C. signal input terminal

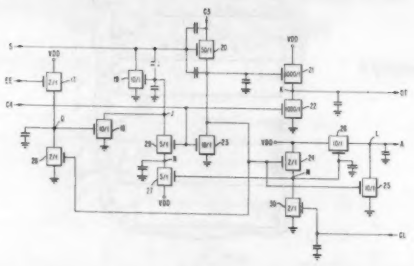
(e) and means responsive to said gating means D.C. output terminal going from a low to high potential state, and vice versa, to energize and deenergize a load connected between whichever of said first and second A.C. terminal is connected with said third A.C. terminal to an A.C. supply source.

4,199,695

AVOIDANCE OF HOT ELECTRON OPERATION OF VOLTAGE STRESSED BOOTSTRAP DRIVERS

Peter W. Cook, Mount Kisco, and Stanley E. Schuster, Granite Springs, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1978, Ser. No. 883,429
Int. Cl.[2] H03K *3/353*
U.S. Cl. 307—269 **23 Claims**



1. An improved high speed clock phase generator of a type wherein a plurality of voltage stressed transistor devices are interconnected for receiving a first and second continuous stream of nonoverlapping clock pulses and generating a plurality of clock phase pulses repeated in a timed relation, said improved phase generator comprising:

a plurality of pairs of bootstrap driver stages connected in series in a closed transmission loop, each of said pairs including, a first stage having a plurality of interconnected transistor devices for receiving said first stream of clock pulses and defining the leading edge of a particular phase pulse in response to an associated enable condition and a second stage having a plurality of interconnected transistor devices for receiving said second stream of clock pulses and defining the trailing edge of said particular phase pulse in response to an associated enable condition;

means for sequentially enabling each of said bootstrap driver stages in said closed transmission loop;

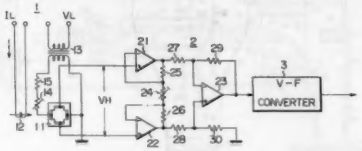
means for connecting a plurality of the transistor devices of a bootstrap driver stage in series to reduce the drain to source voltage drop across each device; and

source means connected to a common point between adjacent series connected devices for generating a particular voltage and maintaining said common point at said particular voltage.

4,199,696
MULTIPLIER USING HALL ELEMENT

Shikei Tanaka, Chigasaki; Kunihiko Matsui, and Tetsuji Kobayashi, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Nov. 7, 1977, Ser. No. 849,419
Claims priority, application Japan, Mar. 18, 1977, 52-30090; Mar. 18, 1977, 52-30091; Mar. 18, 1977, 52-30094; Mar. 18, 1977, 52-30095
Int. Cl.[2] H03K *17/90*
U.S. Cl. 307—309 10 Claims

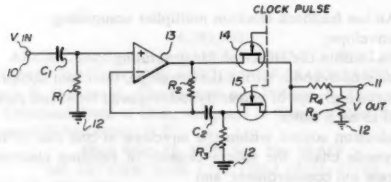


1. A multiplier using a Hall element comprising:
at least one Hall element having a pair of control current input terminals and a pair of Hall output voltage terminals;
at least one electromagnet means for converting load current into magnetic field and applying the magnetic field to said Hall element;
means for converting load voltage into constant control current and then for feeding the constant control current to said control current input terminals;
said Hall element producing across the Hall output terminals Hall output voltage corresponding to the product of the load current and the load voltage;
wherein said control current supplying means includes a transformer with primary winding and with secondary winding for boosting single phase AC load voltage, and at least one high resistive means coupled with the secondary winding, and means for feeding the current fed through said high resistive means to the control current terminals of said Hall element.

4,199,697
PULSE AMPLITUDE MODULATION SAMPLING GATE INCLUDING FILTERING

Gary A. Edwards, Hazeldean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 5, 1978, Ser. No. 922,224
Int. Cl.[2] H03K *17/60, 17/02*
U.S. Cl. 307—352 6 Claims

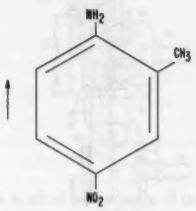


1. A pulse amplitude modulation sampling gate having an input terminal and an output terminal, a differential operational amplifier having an non-inverting input, an inverting input and an output, said input terminal connected to said non-inverting input of said differential input operational amplifier, a first sampling switch connected between said output of said differential input operational amplifier and said output terminal, characterized in that said output terminal, through a second sampling switch is a-c coupled to said inverting input of said differential input operational amplifier.

4,199,698
2-METHYL-4-NITRO-ANILINE NONLINEAR OPTICAL DEVICES

Clyde G. Bethea, East Orange; Barry F. Levine, Livingston; Robert T. Lynch, Berkeley Heights, and Carl D. Thurmond, Morristown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 8, 1978, Ser. No. 967,688
Int. Cl.[2] H03F *7/00*
U.S. Cl. 307—425 8 Claims

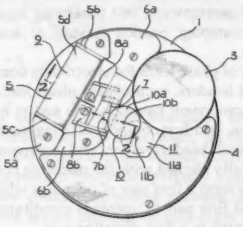


1. A device comprising a crystalline body, means for introducing coherent radiation into said crystalline body, said radiation including a first wavelength, and means for utilizing coherent radiation emitted from said crystalline body, said radiation including a second wavelength,
CHARACTERIZED IN THAT said crystalline body consists essentially of 2-methyl-4-nitroaniline.

4,199,699
MOTOR AND DRIVE FOR A TIMEPIECE

Kazunari Kume; Minoru Watanabe, both of Tokorozawa; Hideshi Ohno, Sayama; Munetaka Tamaru, Tokyo; Takayasu Machida, Iruma; Seiichi Nakamura, Tokyo, and Shigeru Morokawa, Higashi Yamato, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1975, Ser. No. 639,987
Claims priority, application Japan, Dec. 16, 1974, 49-144296
Int. Cl.[2] H02K *37/00*
U.S. Cl. 310—49 R 6 Claims



1. A pulse motor for a timepiece comprising:
an iron core;
a coil wound on said core;
a rotor, said rotor being substantially parallel to said iron core and comprising:
a shaft;
a driving magnet coupled to said shaft; and
a worm gear coupled to said shaft, said worm gear having a plurality of teeth with initial and final sections that are parallel to the plane of rotation of said rotor, said initial and final sections being connected together by a driving section at some angle with the plane of rotation of said rotor; and

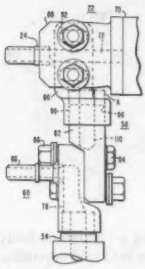
a pair of yokes, said yokes being coupled at one end to said core and enclosing said driving magnet at the other end.

4,199,700

PHASE LEAD FOR CONNECTING STATOR COILS AND PARALLEL PHASE RINGS

Roger H. Daugherty, Wilkinsburg; Warren W. Jones, Bullskin, and Roger L. Swensrud, Plum Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1978, Ser. No. 929,587
Int. Cl.[2] H02K *11/00*
U.S. Cl. 310—71 **5 Claims**



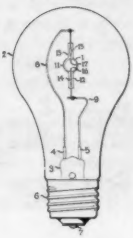
1. A dynamoelectric machine comprising:
a stator member;
a plurality of electrical coils cooperatively associated with said stator member, said coils constituting a stator winding with each coil having two terminating ends, said coils having internal passageways through which fluid coolant is transmissable;
a plurality of arcuate shaped phase rings disposed on at least one axial end of said stator, said phase rings having internal passageways through which fluid coolant is transmissable;
a plurality of coil headers connected to said coil terminating ends for manifolding coolant through the coil's internal passageways, said coil headers each including a contact portion having at least one opening therein;
a plurality of phase ring headers connected to said phase rings for manifolding fluid coolant through said ring's internal passageways, said phase ring headers each including a clamping portion having at least one opening therein;
a plurality of phase leads for electrically connecting said ring and coil headers, each of said phase leads comprising:
a first component having a hole and at least one opening therein, said first component being mateable with one of said coil headers when said component's opening is generally aligned with the mateable coil header's opening to form a first pair of openings wherein at least one of said first pair of openings constitutes a slot which is elongated in a first direction and
a second component having a cylindrical portion and at least one opening therein, said second component being mateable with one of said ring headers, said second component's opening being generally alignable with the mateable ring header's opening to form a second pair of openings wherein at least one of said second pair of openings constitutes a slot which is elongated in a second direction which is perpendicular to said first direction, said cylindrical portion being insertable in said hole in a direction perpendicular to said first and second directions; and
a plurality of fasteners receivable in said aligned openings for securing said phase leads to said ring and coil headers.

4,199,701

FILL GAS FOR MINIATURE HIGH PRESSURE METAL VAPOR ARC LAMP

Ashok K. Bhattacharya, Lyndhurst, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 10, 1978, Ser. No. 932,514
Int. Cl.[2] H01J *61/16, 61/20, 61/52*
U.S. Cl. 313—25 **7 Claims**



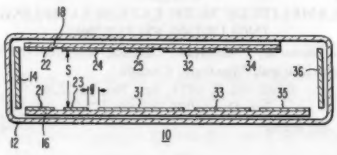
1. A metal vapor arc lamp comprising a miniature arc tube containing mercury and one or more metal halides plus a starting gas which must be at a relatively high fill pressure in order to avoid severe blackening of the arc tube and poor lumen maintenance, characterized by the presence therein of a Penning starting gas mixture of neon admixed with 0.01 to 10% argon, krypton or xenon at a fill pressure above 100 and up to 400 torr.

4,199,702

ELECTRON MULTIPLIER INPUT ELECTRON OPTICS

Scott A. Keneman, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 3, 1976, Ser. No. 682,457
Int. Cl.[2] H01J *43/10, 43/18*
U.S. Cl. 313—105 R **3 Claims**



1. An ion feedback electron multiplier comprising:
an envelope;
means within the envelope for generating ions;
a chain of dynodes within the envelope, the chain comprising two groups of planar dynodes spaced from and parallel to each other;
an electron source within the envelope at one end of the dynode chain, the source capable of emitting electrons upon ion bombardment; and
an electron lens between the dynode chain and the electron source for focusing and bending the path of the electrons from the source to one of the dynodes, the electron lens comprising a plurality of five electrodes divided into two groups, one of the groups being coplanar with one group of dynodes and the other group of electrodes being coplanar with the other group of dynodes, the first and third electrodes being in one group and the second, fourth and fifth electrodes being in the other group.

4,199,703

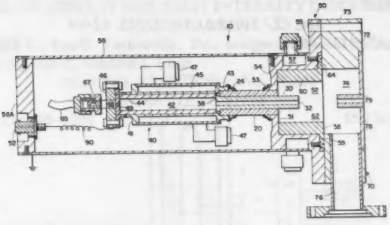
LOW INDUCTANCE, HIGH INTENSITY, GAS DISCHARGE VUV LIGHT SOURCE

James A. R. Samson, 1600 Regency Dr., Lincoln, Nebr. 68520

Filed Oct. 4, 1978, Ser. No. 948,506

Int. Cl.[2] H01J *1/92, 61/067, 61/28, 61/30*

U.S. Cl. 313—204 **8 Claims**



8. In a vacuum ultraviolet gas discharge light source, the combination comprising:

an insulator;

a capillary defining a first bore at least partially mounted within said insulator;

a first, hollow electrode defining a second bore disposed in end-to-end relationship with a first end of said capillary such that said second bore communicates with said first bore;

a second, hollow electrode defining a cavity disposed such that said cavity is adjacent a second end of said capillary and communicates with said first bore;

said capillary and said first and second electrodes being configured such that said first and second bores and said cavity are in coaxial alignment and define an optical axis, and

said second electrode further comprises means defining within said cavity a third bore in coaxial alignment with said optical axis; the diameter of at least one of said second and third bores corresponding to the diameter of said first bore; and said third bore being at least two centimeters long, thereby enhancing the spectra of ions which are produced when said source is operated in a glow discharge mode.

4,199,704

ALUMINA, CALCIA, BARIA, STRONTIA SEALING COMPOSITION AND ARTICLE OF MANUFACTURE

Arun K. Varshneya, Chesterland, and William L. Taylor, East Cleveland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,619

Int. Cl.[2] C03C *3/00, 3/30;* **H01J** *17/18, 61/36*

U.S. Cl. 313—221 **9 Claims**

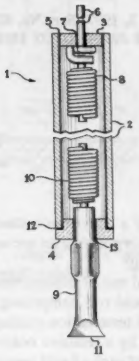
7. A sealed electric lamp comprising an envelope formed of an alumina ceramic tube having end closures, a pair of electrodes and a filling of an ionizable medium therein, and a sealant bonding at least one end closure to said tube, wherein the improvement resides in said sealant being the end product of melting and congealing in place a composition consisting essentially of the following constituent oxides within the indicated proportions by weight:

Al_2O_3: 35 to 45%

CaO: 25 to 40%

BaO: 5 to 20%

SrO: 8 to 30%



and not over 4% in all of one or more of the following oxides: B_2O_3, MgO, SiO_2, TiO_2 and ZrO_2.

4,199,705

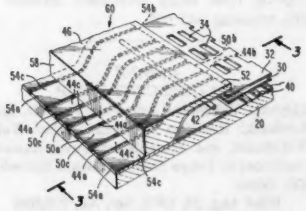
MODULATOR STRUCTURE FOR A FLAT PANEL DISPLAY DEVICE

Charles H. Anderson, Rocky Hill, and Louis S. Cosentino, Belle Mead, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,564

Int. Cl.[2] H01J *29/52, 29/90*

U.S. Cl. 313—422 **5 Claims**



1. In a display device having an evacuated envelope with substantially parallel front and back walls, an electron beam guide, a plurality of discrete first and second control electrodes forming opposing pairs of electrodes partially overlapping said beam guide, a line cathode extending between said opposing pairs of electrodes across one end of said beam guide, and a cathodoluminescent screen on the front wall, the improvement comprising:

a modulator structure partially overlapping said beam guide comprising in combination, said back wall on which is disposed said discrete first electrodes, a modulator member having a smoothly continuous surface with said discrete second control electrodes thereon, said continuous surface having two substantially flat portions which are in spaced apart parallel planes, said flat portions including a sealing portion and a distal portion; and

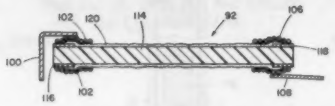
means for attaching said sealing portion of said modulator member to said back wall so that registration and electrical connection of said opposing pairs of said discrete first and second control electrodes is achieved.

4,199,706

SPRING-LOADED RESISTOR TERMINAL

Valentijn B. Bing, Des Plaines, and Donald A. Neis, Naperville, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 2, 1977, Ser. No. 830,270
Int. Cl.[2] H01J *29/84, 31/00;* H01H *37/08*
U.S. Cl. 313—481 1 Claim



1. An electron gun for a television cathode ray tube including a getter assembly incorporating an arc suppression resistor, said assembly comprising:

an elongate cylindrical rod of predetermined length, diameter and resistance, said rod comprising an insulative core having a conductive termination coating on each end, said core being covered by a resistive coating which overlaps a marginal portion of each of said termination coatings on each end of said rod;

on each end of said rod, an electrically conductive coil spring disposed on said termination coating and extending over said overlapped marginal portion thereof, said spring being constricted into firm electrical and mechanical connection with said rod and said coatings,

an electrically conductive getter strap welded to one of said coil springs for supporting a getter pan on the distal end of said resistor and for serving as an electrical terminal therefor; and

an electrically conductive bracket welded to the other of said coil springs for supporting said getter assembly on the gun and for serving as another electrical terminal therefor,

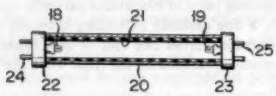
said bracket and said strap mechanically joining a number of turns of the respectively attached coil spring to prevent said spring from being torsionally stressed open and thereby releasing said rod.

4,199,707

FLUORESCENT LAMP

Junetsu Akiyama, Yokohama; Takayoshi Fuchida, Tokyo; Akira Taya, Kawasaki; Kazunori Nagafuchi, Shime; Kohtaro Kohmoto, Yokohama, and Tomohiko Kobuya, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 29, 1978, Ser. No. 938,096
Claims priority, application Japan, Aug. 30, 1977, 52-103190
Int. Cl.[2] H01J *61/44*
U.S. Cl. 313—487 3 Claims



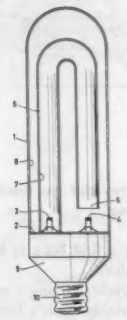
1. A fluorescent lamp which comprises a vacuum-tight envelope provided with electrodes between which discharge takes place while the fluorescent lamp is operated and a film of a phosphor composition layer lined on the inside of said vacuum-tight envelope comprising: silicate phosphor activated by divalent europium, which is selected from the group consisting of strontium chlorosilicate, calcium-magnesium silicate, strontium-magnesium silicate and barium silicate; strontium halophosphate phosphor activated by manganese and antimony; and, yttrium oxide phosphor activated by trivalent europium.

4,199,708

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Petrus C. Lauwerijssen, and Antonius J. van Meer, both of Roosendaal, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,988
Claims priority, application Netherlands, Aug. 23, 1977, 7709265
Int. Cl.[2] H01J *61/04, 61/35, 61/44*
U.S. Cl. 313—493 7 Claims



1. A low-pressure mercury vapor discharge lamp comprising:

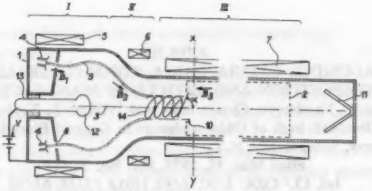
a closed elongated lamp envelope having first and seconds ends, a first U-shaped inner tube having first and second generally parallel legs and disposed in said envelope having (1) a first end sealed in a gas tight manner to said first end of said envelope and (2) a second open end in fluid communication with the interior of said lamp envelope, and first and second electrodes disposed proximate to said first end of said lamp envelope, said first electrode being disposed within said first end of said tube.

4,199,709

INJECTION OF AN ELECTRON BEAM

Jean-Louis Alirot, Chamalieres, and René Le Gardeur, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 23, 1978, Ser. No. 918,369
Claims priority, application France, Jun. 27, 1977, 77 19620
Int. Cl.[2] H01J *25/00*
U.S. Cl. 315—4 8 Claims



1. An injector for an annular beam of monokinetic electrons in helical orbits having a high inclination angle relative to the axis of the helix of the type having an annular electron gun in a revolving vacuum enclosure, wherein it also comprises electrical coils which are able to create the cyclotron effect by a static magnetic field varying in progressive manner in accordance with the axis of the injector from a value B_1 in the actual gun zone up to a value B_3 in the contracted outlet zone of the injector passing through an intermediate value B_2 in the con-

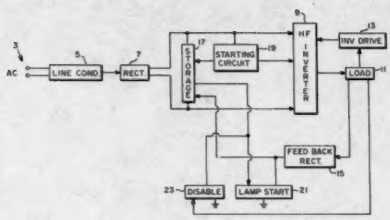
vergent connection zone between said gun zone and said outlet zone, and a correcting electrode located so as to be movable in accordance with the axis of the injector and which is raised to an electrical potential differing from that of the suction or extraction anode of said electron gun.

4,199,710

BALLAST CIRCUIT FOR HIGH INTENSITY DISCHARGE (HID) LAMPS

William C. Knoll, Turbotville, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 12, 1979, Ser. No. 11,348
Int. Cl.[2] H05B *41/36*
U.S. Cl. 315—205 **15 Claims**



1. In a direct drive ballast circuit for a high intensity discharge (HID) lamp having a high frequency inverter circuit coupled to a DC source and to a HID lamp load circuit; a drive circuit coupling the HID lamp load circuit to the high frequency inverter circuit; a charge storage and isolating circuit shunting the DC source; a high frequency inverter starting circuit coupled to the high frequency inverter circuit and to the DC source, the charge storage and isolating circuit, and to the high frequency inverter circuit; and a feedback rectifier circuit coupled to the HID lamp load circuit and to the charge storage and isolating circuit, the improvement comprising a lamp starting circuit coupled to said charge storage and isolating circuit and to said feedback rectifier circuit and a lamp disablement circuit coupled to said HID lamp load circuit and to said lamp starting circuit whereby conductivity in said HID lamp load circuit energizes the lamp disablement circuit which disables the lamp starting circuit.

4,199,711

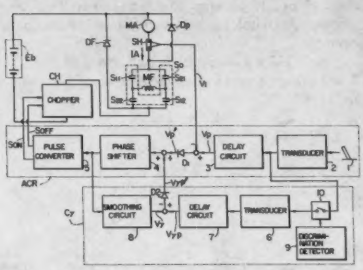
CONTROL APPARATUS FOR ELECTRIC MOTOR VEHICLES

Michimasa Horiuchi, Mito; Masahiko Ibamoto, and Jinichi Toyama, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 19, 1978, Ser. No. 897,712
Claims priority, application Japan, Apr. 22, 1977, 52-45787
Int. Cl.[2] H02P *5/16*
U.S. Cl. 318—139 **5 Claims**

1. A control apparatus for electric motor vehicles including a DC power supply source, a series connection of an electric motor and a chopper circuit, a first diode connected in parallel to said electric motor, a second diode connected in parallel to the armature of said electric motor, switching means for changing-over the polarity of field current of said electric motor upon counter current braking, and a first control system including a phase shifter for controlling the duty cycle of said chopper circuit so as to cause the current flowing through said armature to follow an armature current command value, wherein

said control apparatus further includes a second control system for increasing the duty cycle of said chopper circuit when a spontaneous backward movement of said



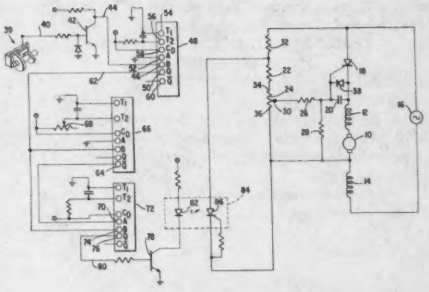
electric motor vehicle takes place upon the starting thereof at an uphill gradient.

4,199,712

MOTOR CONTROL SYSTEM INCORPORATING DIGITAL TOP SPEED LIMITING ARRANGEMENT

Charles R. Odermann, Lake Valhalla, and Jack Brown, Union, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Feb. 8, 1979, Ser. No. 10,454
Int. Cl.[2] H02P *5/16*
U.S. Cl. 318—345 E **7 Claims**



1. A motor control system for operating a motor at preselected speeds and including means for connecting said system to a cyclically varying power supply, a phase control circuit connected between said motor and said power supply, and a firing circuit coupled to said phase control circuit for phase firing said phase control circuit to supply power to said motor during a portion of the cycle of said power supply,

wherein the improvement comprises means for limiting the top speed of said motor including:

means for providing a digital signal having value changes in predetermined timed relation to the rotation of said motor; and

means responsive to said signal value changes being closer together than a predetermined time interval for preventing said firing circuit from operating.

4,199,713

INSTALLATION FOR SUPPLYING THE ELECTRIC POWER SUPPLY OF MOTOR VEHICLES

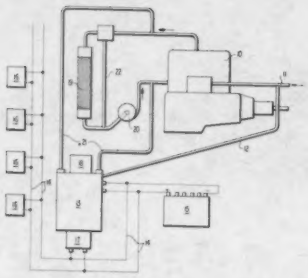
Hans-Joachim M. Förster, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 9, 1975, Ser. No. 566,190

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1974, 2417436

Int. Cl.[2] H02N *3/00*

U.S. Cl. 322—2 R 19 Claims



1. An installation for feeding the electrical power supply of motor vehicles, which includes a generator means, a battery as accumulator means and several loads, characterized in that a thermionic converter means is provided as generator means, which is operable with the fuel of the motor vehicle.

4,199,714

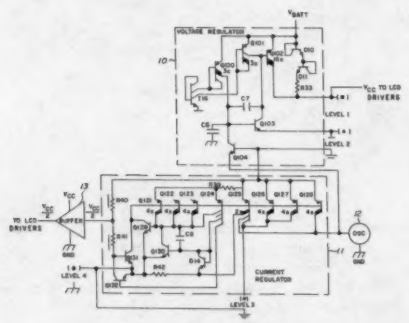
VOLTAGE REGULATOR FOR INTEGRATED INJECTION LOGIC ELECTRONIC SYSTEM WITH LIQUID CRYSTAL DISPLAY

Steven E. Marum, Sherman, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 22, 1978, Ser. No. 908,343

Int. Cl.[2] G05F *1/56*

U.S. Cl. 323—4 16 Claims



1. An I^2L system comprised of:

(a) a plurality of hierarchal levels of I^2L circuitry connected in series; and

(b) a voltage regulator coupled in said series with said plurality of levels if I^2L circuitry, said voltage regulator being responsive to the voltage drop across said levels of I^2L circuitry for producing a regulated voltage with negative temperature coefficient.

4,199,715

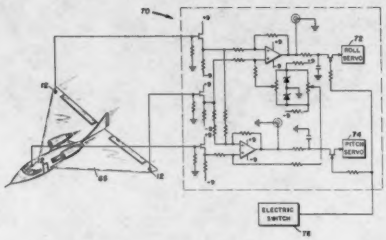
METHOD AND APPARATUS FOR DEFINING AN EQUIPOTENTIAL LINE OR SURFACE IN THE EARTH'S ATMOSPHERE AND MEASURING THE MISALIGNMENT OF A SELECTED LINE OR PLANE RELATIVE TO AN EQUIPOTENTIAL LINE OR SURFACE

Maynard L. Hill, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 524,334, Nov. 15, 1974, Pat. No. 4,091,326, which is a division of Ser. No. 301,363, Oct. 27, 1972, Pat. No. 3,868,074. This application Feb. 24, 1978, Ser. No. 880,786

Int. Cl.[2] G01R *29/12;* B64C *13/16;* G05D *1/10*

U.S. Cl. 324—72 7 Claims



1. A method of defining equipotential lines and surfaces in the essentially vertical static electric field existing in the earth's atmosphere, comprising the steps of:

sensing the electrostatic potential at a first point and at a second point in the atmosphere;

generating a first potential difference signal proportional to the magnitude of the difference between the two sensed potentials; and

utilizing said first potential difference signal to indicate misalignment between a line interconnecting said points and an equipotential line intersecting the interconnecting line at a minimal angle comprising the steps of:

describing a line interconnecting the first and second point and selecting a reference point on the interconnecting line,

calculating the potential gradient at the reference point, and

determining from the potential gradient and the interconnecting line the essentially vertical angle of misalignment between the line interconnecting the first and second points and an equipotential line passing through the reference point.

4,199,716

MICROWAVE HAZARD ALARM

John Reindel, 4060 Mount Brundage, San Diego, Calif. 92111

Filed Feb. 21, 1978, Ser. No. 879,255

Int. Cl.[2] G01R *31/02;* H04B *1/16*

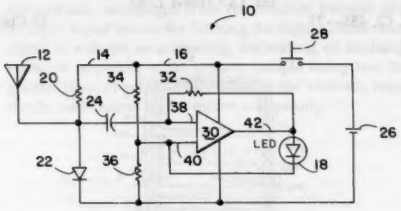
U.S. Cl. 324—95 11 Claims

1. A microwave radiation detector comprising: first means for receiving microwave radiation; means for indicating the presence of microwave radiation; second means operably coupled between said first means and said indicating means for providing a first output to said indicating means in response to the reception by said first means of microwave radiation having a power level below a predetermined level and for providing a second output to said indicating means in response to the reception by said first means of microwave radiation at or above said predetermined level; said second means comprising

a detector diode connected to said first means;

a differential amplifier having an output, an inverting input and a non-inverting input, said output being connected to said indicating means;

and an R-C timing circuit connected to said first means and to said differential amplifier; said indicating means being connected directly and operatively to said differential amplifier output and directly and operatively to said said differential amplifier non-inverting input; whereby said



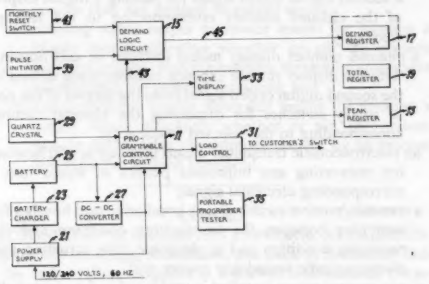
indicating means provides a first indication in response to received microwave radiation below said predetermined level and provides a second indication in response to received microwave radiation at or above said predetermined level.

4,199,717

TIME OF DAY DEMAND METERING SYSTEM AND METHOD

Warren R. Germer, Rochester, and Ansell W. Palmer, Hampton, both of N.H., assignors to General Electric Company, Somersworth, N.H.

Filed Feb. 27, 1978, Ser. No. 881,503
Int. Cl.[2] G01R *15/08, 19/16*
U.S. Cl. 324—116 **13 Claims**



1. A time-of-day demand metering system for registering the amount of electrical energy consumed during demand intervals comprising:

(a) selectively engageable means for registering the mount of electrical energy being consumed during said demand intervals;

(b) means for periodically generating electrical pulses having a repetition frequency proportional to the amount of electrical energy being consumed by said time-of-day demand metering system;

(c) means for generating a control signal at prescribed intervals;

(d) means responsive, in a first instance, to said control signal for generating an end of interval signal and responsive, in a second instance, to said control signal and to a comparison signal for generating a demand interval on signal;

(e) means for controlling, during each demand interval, when the registering of the amount of electrical energy being consumed may take place, said means for controlling including,

(1) comparator means for generating said comparison signal,

(2) first and second counter means, each receiving said electrical pulses and each having output terminals connected to said comparator means for providing count signals thereto, said first counter means being set to a predetermined count in response to said end of interval signal and being enabled to count said electrical pulses during each demand interval in the absence of said end of interval signal, said second counter means, in response to said demand interval on signal, being enabled to count said electrical pulses during each demand interval when the contents of said first and second counter means are at least equal as detected by said comparator means generating said comparison signal, whereby the contents of said second counter means manifests a magnitude proportional to the amount of electrical energy consumed in a first demand interval plus that excess amount of electrical energy consumed in each subsequent demand interval in which the amount of electrical energy consumed is greater than the amount consumed in the one previous demand interval of maximum electrical energy consumption; and

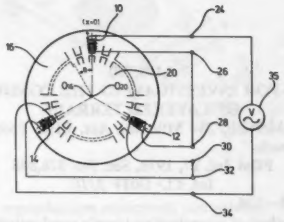
(f) means responsive to said demand interval on signal to selectively engage and disengage said means for registering, whereby said means for registering registers the amount of electrical energy consumed during that one demand interval of maximum electrical consumption as controlled by said comparison signal applied to the means for generating said demand interval of signal during said second instance.

4,199,718

BEARING WEAR DETECTOR FOR AC ROTARY ELECTRIC INSTRUMENT

Hiroshi Ikeda; Osamu Ishimaru; Teruyoshi Nakatake, and Tetsuzo Sakamoto, all of Kita-Kyushu, Japan, assignors to Nikkiso Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1977, Ser. No. 791,249
Claims priority, application Japan, Apr. 28, 1976, 51-48924
Int. Cl.[2] G01R *31/00, 33/00*
U.S. Cl. 324—158 MG **7 Claims**



1. A bearing wear detector for an AC rotary instrument having a rotor and a stator, in which stator are defined a plurality of magnetic pole positions, comprising a plurality of detecting coils mounted on said stator approximately uniformly spaced from each other and concentric to the central axis of the stator, the number of said pole positions being other than a multiple of the detecting coils, said detecting coils being connected in series with each and to means for measuring variation in voltage passing therethrough.

4,199,719

INSTRUMENT FOR MEASURING THE SPEED IN RPM OF A ROTATING GEAR

Russel W. Grob, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

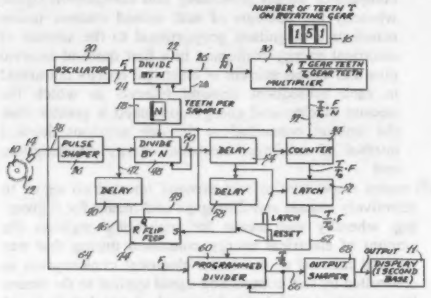
Filed Jun. 22, 1977, Ser. No. 808,834
Int. Cl.[2] G01P *3/48*
U.S. Cl. 324—166 **17 Claims**

1. In a speed measuring system having means for sensing

rotation of a gear or the like, said means generating T pulses per revolution and means including a counter with a periodic time base for displaying the speed of rotation in terms of revolutions per unit of time, an improved circuit for converting the generated pulses T to a series of display counter drive pulses, comprising:

a source of signal at a reference frequency;

means connected with said sensing means for establishing a sample period of N generated pulses T;



means for deriving from said reference frequency signal a series of pulses having a rate of directly proportional to T and inversely proportional to N;

a counter for counting the derived pulses which occur during a sampling period; and

means responsive to the count of said last mentioned counter and to said reference signal frequency for generating the display counter drive pulses.

4,199,720

METHOD FOR INVESTIGATING THE CONDUCTIVITY OF LAYERED TERRAIN

J. Duncan McNeill, 284 Mill Rd., Apt. PH8, Etobicoke, Ontario, Canada

Filed Jul. 27, 1978, Ser. No. 928,846
Int. Cl.[2] G01V *3/10*
U.S. Cl. 324—334 **7 Claims**

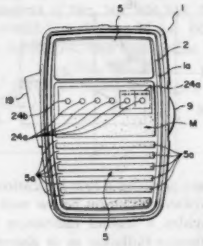
1. In a method of investigating terrain conductivity comprising generating an alternating current having a frequency F hertz, and applying the current to a transmitter coil for transmission to the terrain, receiving signals from the terrain by means of a receiver coil spaced from the transmitter coil above the terrain by a distance D of not more than about $50/\sqrt{FG}$ where G is the highest terrain conductivity to be measured in siemens/meter, isolating the quadrature component of the received signal, and using the amplitude of said signal as a linear indicator of terrain conductivity; the further step when the terrain is layered of altering the relative locations of the coils and terrain between repeated readings at the same site so as to change the relative contributions to the terrain conductivity reading of different layers of the terrain, the coil separation D being maintained at not more than about $50/\sqrt{FG}$ for each of the layers, whereby the contribution to the conductivity reading due to any layer is the product of the conductivity of that layer and the reading which would theoretically be obtained with the same values of F and D from that layer alone were it an isolated layer of unit conductivity.

4,199,721

HAND-HELD MICROPHONE FOR TRANSCEIVER

Atsushi Ono, Fussa; Shoji Fujino, Tokyo; Yukio Ozaki, Tateno, and Kentaro Suzuki, Ageo, all of Japan, assignors to Nippon Atsudenki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1977, Ser. No. 843,668
Int. Cl.[2] H04B *1/40*
U.S. Cl. 455—77 **13 Claims**



1. A hand-held microphone unit for controlling a transceiver over a multi-conductor cable electrically connected therebetween, the microphone unit comprising:

a housing small enough to grip by one hand;

a rotary switch means installed in said housing yet operable from outside the housing, the switch means comprising a pair of rotary switches, a first of the pair of rotary switches generating a first digital coded signal for selecting one of a set of preset frequencies within the transceiver, a second of the pair of rotary switches generating a second digital coded signal for making a digital display of the channel number corresponding to the selected frequency;

a channel number display means installed in said housing, with the display surface exposed outside, being driven by the second digital coded signal from the second of the pair of rotary switches for displaying the channel number corresponding to the selected frequency;

an electroacoustic transducer means installed in said housing for converting any impressed pattern of sound into a corresponding electrical signal;

a transmit/receive switch means installed in said housing for switching between the transmitting condition and the receiving condition and at the same time actuating said electroacoustic transducer means; and

a gain control means installed in said housing for varying the amplification degree of at least one amplifier in the transceiver.

4,199,722

TRI-STATE DELTA MODULATOR

Israel Paz, 112 Shd. Hanasy, Haifa, Israel (34642)

Filed Jun. 30, 1976, Ser. No. 701,449
Int. Cl.[2] H03K *13/22*
U.S. Cl. 375—27 **12 Claims**

1. An apparatus for encoding an analog signal into a digital status change signal in the form of a binary coded pulse train which indicates the difference between a present sample of the analog signal and an estimate of the present sample as being increasing, decreasing or unchanged, comprising:

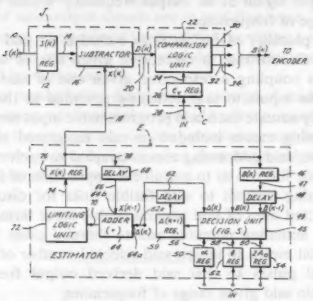
(a) difference signal means for generating from the present sample in a succession of uniformly spaced samples and the estimate thereof a difference signal representing the difference between the present sample and the estimate;

(b) signal generating means for generating from the difference signal a digital status change code forming the digital status change signal which indicates an increasing, decreasing, or unchanged status of the present sample with respect to the estimate thereof, said signal generating means comprising

(i) means for defining a threshold signal level which may be adaptively changed for different applications;

(ii) means for comparing the difference signal to the defined threshold signal level, said comparison means indicating whether the present sample is less than, greater than, or substantially unchanged from the estimate thereof, and

(iii) output signal means for forming the digital status change signal to indicate an increasing, decreasing, or unchanged status in response to the present sample being less than, greater than, or substantially equal to the estimate, respectively, said output signal means comprising:



increasing status output generator means for forming a binary signal indicating whether or not the present sample is less than the estimate thereof by an amount greater than the defined threshold signal;

decreasing status output generator means for forming a binary signal indicating whether or not the present sample is greater than the estimate thereof by an amount greater than the defined threshold; and

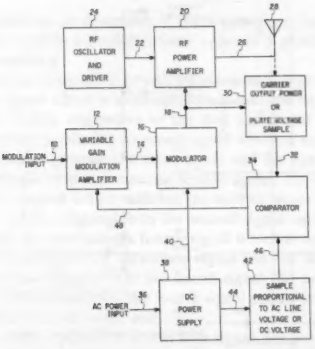
unchanged status output generator means for forming a binary signal indicating whether or not the present sample differs from the estimate thereof by an amount less than the defined threshold.

4,199,723

AUTOMATIC MODULATION CONTROL APPARATUS

Forest M. Cummings, Richardson, and Jack S. Sellmeyer, Dallas, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 24, 1978, Ser. No. 881,100
Int. Cl.[2] H04B *1/04*
U.S. Cl. 455—108 **2 Claims**



1. RF transmitter apparatus for maintaining constant modulation index conditions comprising, in combination:

RF power amplifier means for supplying AM power output signals to an antenna;

variable gain modulation means, including modulation signal input means and control signal input means, connected to said RF power amplifier means for supplying modulating signals thereto, the signal gain through said modulation means varying as a function of a signal supplied to said control input thereof;

power supply means, connected to said RF power amplifier means;

comparator means, connected to said RF power amplifier means, said power supply means and said control signal input means of said modulation amplifier means, for supplying control signals to said control signal input means indicative of the relative value of the voltage of said power supply means and the carrier power level of the RF power amplifier means; and

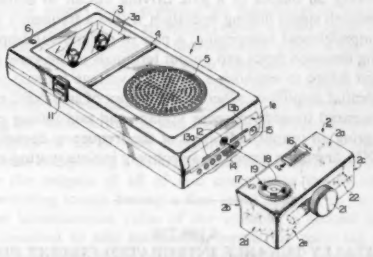
PWM (pulse-width modulated) means and filter means, connected between said power supply means and said RF power amplifier means and connected to said variable gain modulation amplifier means for varying the effective voltage across said RF power amplifier means in accordance with signals received from said modulation means.

4,199,724

RADIO TUNER FOR COUPLING WITH CASSETTE TAPE RECORDER

Shiro Kondo, Tama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 11, 1976, Ser. No. 741,156
Claims priority, application Japan, Apr. 30, 1976, 51-55416; Apr. 30, 1976, 51-55417
Int. Cl.[2] G11B *31/00*; H04B *1/06*
U.S. Cl. 455—344 **8 Claims**



1. Sound reproduction equipment comprising:

an A.M. radio tuner including a tuner casing made of a synthetic material and a tuner circuit housed in said casing;

a cassette recorder including a recorder casing made of a metallic material;

means for detachably coupling said tuner casing to said recorder casing; and

said tuner circuit including a bar antenna housed in said tuner casing and located along a wall of said tuner casing which is furthest from said recorder casing when said tuner casing is coupled to said recorder casing whereby the shielding effect of said recorder casing is minimized with respect to said bar antenna; and

said cassette recorder including means for generating an acoustical output representative of an internally generated electrical signal derived from a magnetic tape or an externally generated electrical signal applied to said recorder, said tuner circuit being incapable of independently generating an acoustical output and capable of generating a first electrical signal representative of a radio signal received by said antenna only when an external power source is applied thereto, and said means for detachably coupling

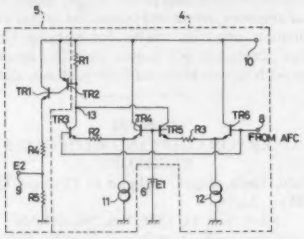
said tuner casing to said recorder casing includes means for applying a power source in said recorder housing to said tuner circuit and for applying said electrical signal representative of said radio signal to said acoustical output generating means of said cassette recorder whereby said tuner is capable of generating an acoustical output only when it is connected to said recorder casing.

4,199,725

FM RECEIVER MUTING RANGE SETTING CIRCUIT

Toyoziro Naokawa, Sakado, Japan, assignor to Toko, Inc., Tokyo, Japan

Filed Oct. 30, 1978, Ser. No. 955,747
Claims priority, application Japan, Oct. 28, 1977, 52-129340
Int. Cl.[2] H04B *1/10*
U.S. Cl. 455—212 **7 Claims**



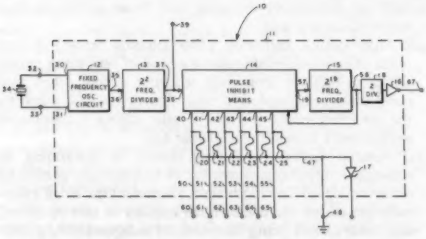
1. In a muting range setting circuit for an FM receiver having an FM detecting circuit and an AFC circuit providing an input to said muting range setting circuit, said setting circuit delivering an output to a gate driving circuit to define and accomplish signal muting operation within a frequency range, the improvement comprising: a pair of differential amplifiers having common input and output terminals in the same polarity and means to establish a reference voltage for said pair of differential amplifiers, wherein the output of said AFC circuit is compared to said reference voltage and said setting circuit delivering an output indicative of the frequency deviation of said FM detecting circuit to selectively initiate muting operation.

4,199,726

DIGITALLY TUNABLE INTEGRATED CIRCUIT PULSE GENERATOR AND TUNING SYSTEM

Allen A. Bukosky, Rte. 5, Box 270, and LaVerne L. Frey, Rte. 1, Box 211A, both of Delavan, Wis. 53115

Filed Sep. 23, 1977, Ser. No. 836,170
Int. Cl.[2] H03K *1/16*; G04C *9/00*
U.S. Cl. 328—14 **18 Claims**



1. A digitally adjustable pulse generator for providing output pulses at an output frequency within a predetermined range of frequencies corresponding to a specified frequency tolerance, comprising:

fixed frequency oscillator means for providing successive electrical pulses at a fixed frequency, said fixed frequency being within a given range of frequencies above a nominal frequency;

an integrated circuit substrate containing pulse inhibit means coupled to said oscillator means and including a plurality of programmable input terminals, said pulse inhibit means adapted for cyclically inhibiting selected numbers of said electrical pulses responsive to selective application of actuating potential to said input terminals to derive an output signal at an output frequency within said given range of frequencies;

a like plurality of fusible links included on said integrated circuit substrate, a respective given one of said fusible links coupling a respective given one of said programmalbe inputs to said actuating potential to thereby normally actuate each said programmable input terminal; and

addressing means included on said integrated circuit substrate, said addressing means coupled to each one of said fusible links so as to permit the application of fusible link opening current to said fusible links for disconnecting selected ones of said programmable input terminals from said actuating potential and to thereby cause said pulse inhibit means to inhibit said selected number of said electrical pulses so that said derived output frequency is within said given range of frequencies;

wherein said integrated circuit includes a plurality of external contact means coupled to said addressing means adapted to receive said fusible link opening current and said fusible links are coupled to said actuating potential through a common bus; and,

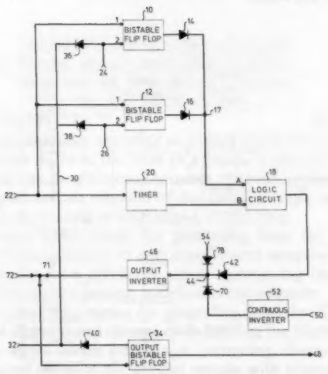
a common external contact coupled to said common bus whereby said fusible links receive said opening current applied between said external contact means and said common external contact so that the output frequency of said generator may be adjusted externally to said integrated circuit.

4,199,727

MALFUNCTION DETECTOR

Austen B. Barnes, 337 Sheppard Ave. E., Pickering, Ontario, Canada (L1V 1E6)

Filed Apr. 14, 1978, Ser. No. 896,304
Claims priority, application United Kingdom, Nov. 7, 1977, 46282/77
Int. Cl.[2] H03k *17/28*; H03K *19/24*
U.S. Cl. 328—71 **3 Claims**



1. Malfunction detection apperatus comprising:

a plurality of sensor-responsive elements each corresponding to the performance of an operation,

each of said elements being designed to provide an output signal of a first state absent a signal that the operation to which it corresponds is not performed and of a second state after receipt of a signal that the operation to which it corresponds is performed,

a logic circuit connected to have a first input and a second input,

circuitry connected to receive said output signals and to provide to said first input a signal of one potential to said first input when all said output signals are in said second state and to provide a signal of another potential when some of said output signals are in said first state,

timing means responsive to a signal for providing a signal to said second input of a first level during an interval and a second level thereafter,

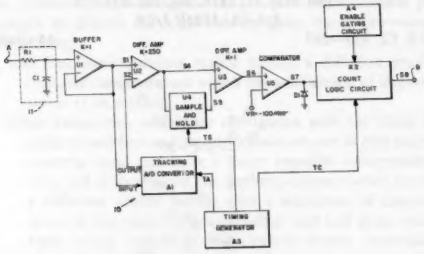
said logic means being designed on receipt of said second level timing means signal to provide a first output signal if there is then provided said one potential to said first input and a second output signal when there is provided said an other potential to said first input.

4,199,728

SLOPE DETECTOR

Raymond J. Carpenter, Newtown, Pa., assignor to Innovative Medical Systems, Corp., Warminster, Pa.

Filed Aug. 21, 1978, Ser. No. 935,550
Int. Cl.[2] H03K 5/153
U.S. Cl. 328—114 **3 Claims**



1. Apparatus, to determine if the slope of an input signal equals or exceeds a predetermined value in a predetermined time, comprising:

first means, responsive to said input signal, for generating a first signal which is substantially equal to the input signal;

second means, responsive to the first signal and the input signal for producing a second signal which is equal to the difference between the input signal and the first signal;

third means, responsive to the second signal, for generating a third signal which matches the second signal;

fourth means, responsive to the second signal and the third signal, for producing a fourth signal which is equal to the difference between the second signal and the third signal;

fifth means, responsive to the fourth signal, for producing a fifth signal whenever the fourth signal equals or exceeds a predetermined value; and

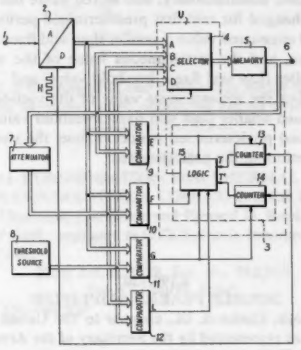
sixth means, responsive to the fifth signal, for producing an output signal whenever the fifth signal is present for a predetermined time.

4,199,729

VARIABLE PEAK DETECTOR

Jean-Michel Durand, Le Kremlin Bicetre, and Etienne Penicaud, Chaville, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Continuation of Ser. No. 667,958, Mar. 17, 1976, abandoned.
This application Sep. 27, 1977, Ser. No. 837,147
Claims priority, application France, Mar. 20, 1975, 75 08763
Int. Cl.[2] H03K 5/153, 5/20
U.S. Cl. 328—151 **4 Claims**



1. Apparatus for detecting the peak value of a variable comprising:

a memory for storing a value; a first comparator means for comparing the instantaneous value of the variable with a value stored in said memory; an attenuting means for transmitting an attenuated value equal to the stored value attenuated by a predetermined fixed ratio; a second comparator means for comparing the instantaneous value of the variable with said attenuated value; a third comparator means for comparing the instantaneous value of the variable with a predetermined fixed threshold value; a fourth comparator means for comparing said attenuated value with said threshold value; and a control means for modifying the value stored in said memory as a function of the outputs of all of said comparator means, said control means comprising a control assemblage means connected to the outputs of all of said comparator means and a switching means having a first input adapted to receive the instantaneous value of the variable, a second input connected to said attenuating means for receiving said attenuated value and a third input adapted to receive a fixed value which has a maximum value equal to said threshold value, for replacing said stored value by one of these three received values under the control of said control assemblage means such that:

the stored value is replaced by the instantaneous value of the variable in each of the two following first cases:

(1) when, simultaneously, the instantaneous value of the variable is greater than or equal to said threshold value and greater than said stored value; and

(2) when, simultaneously, said stored value has remained unchanged for a first predetermined period of time and the instantaneous value of the variable is greater than or equal to said fixed threshold value and greater than or equal to said attenuated value:

said stored value is replaced by said attenuated value in each of the two following second cases:

(1) when, simultaneously, said stored value has remained unchanged for said first predetermined period of time, said attenuated value is greater than the instantaneous value of the variable, and instantaneous value of the variable is greater than or equal to said fixed threshold value; and

(2) when, simultaneously, the stored value has remained

unchanged for said first predetermined period of time, said attenuated value is greater than or equal to said fixed threshold value, and the instantaneous value of the variable is smaller than said fixed threshold value, provided the instantaneous value of the variable has remained smaller than said fixed threshold value for less than a second predetermined period of time; and

said stored value is replaced by a fixed value which has a maximum equal to said fixed threshold value, in each of the two following third cases:

(1) when, simultaneously, said stored value has remained unchanged for said first predetermined period of time, said attenuated value is smaller than said fixed threshold value, and the instantaneous value of the variable is smaller than said fixed threshold value, and

(2) when the instantaneous value of the variable has remained smaller than said fixed threshold value for said second predetermined period of time; the stored value constituting the peak detected.

4,199,730

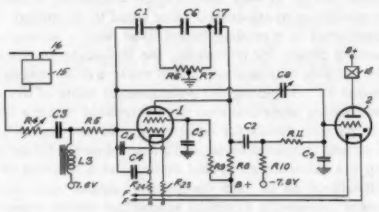
DOUBLE PEAKED AMPLIFIER

Virgil R. Beck, Elmhurst, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 28, 1949, Ser. No. 118,420

Int. Cl.[2] H03F 1/36, 1/00

U.S. Cl. 330—109 **2 Claims**



1. An audio frequency amplifier selectively responsive to a band of Doppler frequencies comprising an electron tube having at least grid, anode and cathode elements, a three pi network connecting said electron tube anode and grid elements, said network providing in-phase feedback producing maximum gain at peak high frequency of said Doppler band, an output circuit for said audio frequency amplifier, an input circuit for said audio frequency amplifier, a high frequency peak gain control comprising a capacitor coupling said output circuit and grid element of said electron tube, said gain control producing negative feedback and thereby controlling the high frequency peak gain of said audio frequency amplifier, an isolating resistor in series with said capacitor and said output circuit, said isolating resistor functioning to isolate said capacitor from said network so that a change in said capacitor will affect only the gain and not the peak frequency of said network, said input circuit including input terminals, a variable resistor, capacitor and inductor series connected across said input terminals, and means connecting the grid-cathode circuit of said electron tube across said inductor, whereby frequencies below the low frequency end of said band are sharply surpressed, variable said resistor being adjustable to increase the impedance of said input circuit and thereby interact with the said peak high frequency gain to increase the effectiveness of said network.

4,199,731

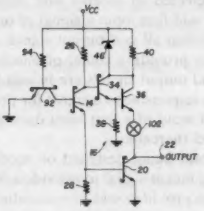
REVERSABLE ELECTRICALLY ALTERABLE AMPLIFIER CONFIGURATIONS

David L. Taylor, and Stephen A. Harris, both of Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 861,331, Dec. 16, 1977, Pat. No. 4,153,883. This application Dec. 27, 1978, Ser. No. 973,670

Int. Cl.[2] H03F 3/26; B01J 17/00

U.S. Cl. 330—262 **11 Claims**



1. In a push-pull amplifier having phase splitting means, a first transistor means in an emitter follower configuration and a second transistor means in a common emitter configuration, the improvement comprising:

amorphous material means in said first transistor means, electrically alterable between high and low impedance states, for converting said amplifier between a push-pull and open collector nonvolatile configurations.

4,199,732

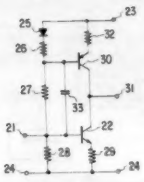
AMPLIFYING CIRCUIT

Tatsuhiko Okuma, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,079

Int. Cl.[2] H03F 3/18

U.S. Cl. 330—267 **14 Claims**



1. An amplifying circuit comprising

an input terminal to which an alternating current input signal is applied;

a first transistor;

a second transistor where one of said first and second transistors is a NPN transistor and the other is a PNP transistor;

an output terminal to which is connected the respective collectors of said first and second transistors;

means for operating said second transistor as a constant current source; and

frequency sensitive connecting means for connecting said input signal to the respective bases of said first and second transistors so that at frequencies above a predetermined frequency of said input signal, (a) said second transistor no longer functions as a constant current source and (b) said first and second transistors function as a push-pull amplifier for said input signal.

4,199,733

EXTENDED-DRAIN MOS MIRRORS

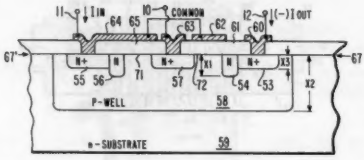
Otto H. Schade, Jr., N. Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,601

Claims priority, application United Kingdom, Jan. 19, 1978, 659/78; Sep. 14, 1978, 36789/78

Int. Cl.² H03F 3/16

U.S. Cl. 330—277 6 Claims



1. An improved current amplifier of the type having an input terminal, an output terminal and a common terminal and including first and second insulated gate field effect transistors, said transistors being formed in a first semiconductor region of first impurity type, and having respective drain and source semiconductor regions of a second impurity type disposed in said first semiconductor region, said first and second impurity types forming opposite conductivity type regions; and means connecting said first transistor between said input and common terminals for operating it as a master mirroring transistor; and means connecting said second transistor between said output and common terminals for operating it as a slave mirroring transistor, the current gain of said current amplifier being ideally determined by the ratio of the geometric dimensions of said master and slave mirroring transistors, which amplifier circuit is of the type subject to having dissimilar potentials on said input and output terminals, said amplifier being improved for essentially eliminating the tendency for the dissimilar potentials to disturb the ideal current gain, the improvement comprising:

said first semiconductor region having a diffusion graded impurity concentration which has a maximum of impurity atoms at its surface;

drain extensions, which are contiguous with the drain regions of said first and second transistors, are of said second impurity type, and have a lesser impurity concentration than said drain regions, the impurity concentration having a diffusion graded profile with a maximum of impurity atoms at the semiconductor surface; and said drain extensions being formed in the drain-to-source conduction channels of said first and second transistors and extending sufficiently into said first region from its surface to eliminate the effect of channel shortening.

4,199,734

CRYSTAL OSCILLATOR HAVING SWITCHABLY DISABLED HARMONIC-TUNED OUTPUT CIRCUIT

Anton Dressen, Dachau, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

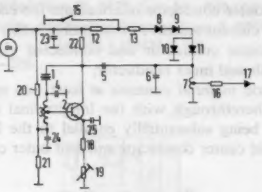
Filed Nov. 28, 1978, Ser. No. 964,336

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753879

Int. Cl.² H03B 5/36

U.S. Cl. 331—76 8 Claims

1. An oscillator comprising: a one-stage amplifier and a quartz crystal resonator which operates in series resonance to a LC oscillating circuit; a harmonic tuned oscillating circuit which is tuned to a harmonic of a frequency of the quartz crystal resonator and which is connected via a filter means to



an output of the amplifier; and a switching means for short-circuiting the harmonic tuned oscillating circuit when required.

4,199,735

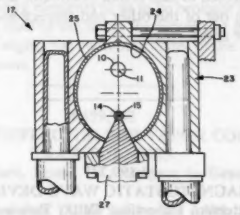
OPTICAL COMPENSATION FOR THERMAL LENSING IN CONDUCTIVELY COOLED LASER ROD

Curt H. Chadwick, Los Altos, and Edward D. Reed, Sunnyvale, both of Calif., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jul. 3, 1978, Ser. No. 912,907

Int. Cl.² H01S 3/045

U.S. Cl. 331—94.5 P 3 Claims



1. In laser apparatus comprising a housing having an elliptical bore with first and second focal axes, a pump lamp having an axis approximately coincident with said first axis, means for supporting said lamp in said bore, means to energize said lamp, a cylindrical laser rod having an axis approximately coincident with said second axis and disposed within said bore spaced from and parallel to said lamp whereby said lamp pumps said rod for producing a laser beam essentially along the axis of the rod, the improvement comprising

means for supporting said rod comprising

a heat conductive body having one end extending into said bore and the opposite end projecting outside said housing,

said body making heat conductive engagement with the exterior of said rod over an arc not greater than 85° and not less than 70°,

reflecting means in the path of said laser beam on opposite ends of said rod defining the laser optical resonator, and

cylindrical beam focusing means within said laser resonator.

4,199,736

RF FUSE

James E. McTaggart, Malibu, and Nuel C. Benson, Rancho Palos Verdes, both of Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 30, 1978, Ser. No. 873,622

Int. Cl.² H01P 1/10, 1/22, 3/06; H01R 19/48

U.S. Cl. 333—17 L 3 Claims

1. An RF connector comprising:

a center conductor portion,

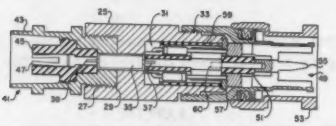
an outer conductor portion surrounding said center conduc-

tor and havings its longitudinal axis substantially parallel to the longitudinal axis of said center conductor;

dielectric material interposed between said center conductor and said outer conductor intermediate the ends thereof;

at least one current sensitive interrupting means surrounded by said outer conductor and connected electrically in series with said inner conductor;

said dielectric material contains at least two openings extending therethrough with the longitudinal axis of said openings being substantially parallel to the longitudinal axis of said center conductor and said outer conductor;



a first diode located within one of said openings and havings its anode lead extending out of one end thereof and connected to said center conductor and its cathode lead extending out of the other end thereof and connected to said outer conductor, and

a second diode located within the other said opening and having its cathode lead extending out of one end thereof and connected to said center conductor and its anode lead extending out of the other end thereof and connected to said outer conductor.

4,199,737

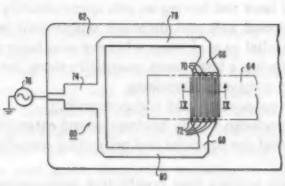
MAGNETOSTATIC WAVE DEVICE

Ralph W. Patterson, Cupertino, Calif.; Terence W. O'Keeffe, Churchill Boro, and John D. Adam, Murrysville Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 18, 1978, Ser. No. 952,432

Int. Cl.[2] H03H *9/26, 9/34, 9/30*; H01P *3/08*

U.S. Cl. 333—154 **11 Claims**



1. A magnetostatic wave device operable within a biasing magnetic field, comprising:

(a) a magnetostatic wave supporting material;

(b) first and second spaced apart microstrip coupling sections in operative relationship with said material;

(c) each said section having at least one finger member in substantially parallel side-by-side relationship with the finger member of the other said section;

(d) means for electrically connecting both said sections together so as to be electrically in parallel in a manner that if said device is operated as a launcher of magnetostatic waves by coupling to an input microwave signal the current in said side-by-side fingers will be in opposite directions and if said device is operated as a magnetostatic wave receiving currents will be induced in said side-by-side fingers, which currents are in opposite directions.

4,199,738

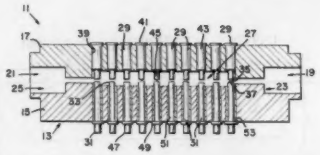
MULTIPACTOR SWITCH

Thomas P. Carlisle, Rolling Hills, and Rodney D. Dokken, Hermosa Beach, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 16, 1978, Ser. No. 869,872

Int. Cl.[2] H01P *1/14;* H01J *43/02*

U.S. Cl. 333—258 **6 Claims**



1. A multipactor switch capable of switching microwave energy at high switching speeds, comprising:

a waveguide comb-line bandpass filter structure including a plurality of spaced, axially-aligned pairs of opposing electrodes defining predetermined gaps whereat multipacting discharges normally occur;

isolation means disposed in said structure and associated with more than one of said pairs of electrodes for electrically isolating said opposing electrodes; and

biasing means coupled to selected ones of said pairs of electrodes having electrically isolated opposing electrodes for providing a predetermined bias potential difference between said isolated opposing electrodes and thereby interrupt normal multipacting action in the gaps between the biased electrode pairs.

4,199,739

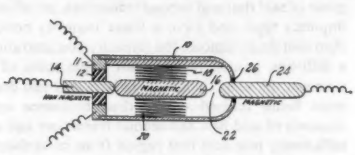
LIQUID WETTED SWITCHING ELEMENT

John Deith, Holmdel, N.J., assignor to C. P. Clare and Company, Chicago, Ill.

Filed Nov. 28, 1977, Ser. No. 855,240

Int. Cl.[2] H01H *1/08*

U.S. Cl. 335—58 **11 Claims**



1. A liquid-wetted switching element, including an hermetically sealed envelope in a housing, comprising:

(a) a first armature, formed of an electromagnetically sensitive material;

(b) means for resiliently supporting said armature within said envelope, said resilience means having a metallically wetable surface, said means electrically connected to said envelope;

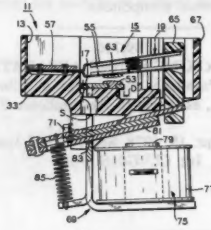
(c) an electrically conductive wetting agent, said agent being attracted to the surfaces of said resilient means and said armature, said wetting agent being sealed within said envelope, and

(d) a pair of contacts proximately mounted to said armature within said housing, whereby an electromagnetic flux of sufficient magnitude will move said armature a pre-determined distance towards one of said contacts, therein completing an electrical circuit.

4,199,740
SWITCH DEVICE AND METHOD OF MAKING

Lee O. Woods, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 24, 1978, Ser. No. 899,595
Int. Cl.[2] H01H 9/02, 13/04
U.S. Cl. 335—202 6 Claims

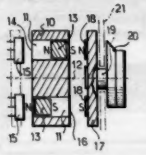


1. In a switch device having a dielectric material housing, a chamber in the housing, at least one surface on the housing and within the chamber, coil means associated with the housing and adapted for electrical energization, switch means movable in the chamber, means arranged in magnetic coupling relation with the coil means for effecting the actuation of the switch means between an at-rest position and an actuated position upon the electrical energization and deenergization of the coil means, respectively, a contact on the switch means, a terminal associated with the housing and having a section within the chamber, a pair of opposite faces on the terminal section with one of the opposite faces being arranged generally in opposed spaced relation with the at least one surface, another contact on the other of the opposite faces of the terminal section and arranged to engage with the first named contact upon the actuation of the switch means to its actuated position and to disengage the first named contact upon the return of the switch means to its at-rest position, and means for preventing the establishment of a conductive path between the at least one surface and the terminal section of minute contact material particles emanating from at least one of the first named contact and the another contact and deposited on the at lease one surface in response to an arc blast created between the first named contact and the another contact at least upon the disengagement thereof; the improvement wherein the preventing means comprises an extension on the housing and integrally formed with the at least one surface within the chamber, a free end on said extension predeterminately spaced from the at least one surface and arranged to engage with the one opposite face of the terminal section, wall means on said extension disposed so as to extend generally in circumscribing relation about said extension and interconnecting between the at least one surface and said free end of said extension so as to generally define a marginal edge portion extending generally in circumscribing relation about said free end, the terminal section extending over said free end of said extension beyond said marginal egde portion at least a preselected distance so as to shield at least a band on said wall means extending generally in circumscribing relation completely thereabout from not only heat of the arc blast but also from the particles emanating from the at least one of the first named contact and the another contact in response to the arc blast therebetween and thereby to prevent the establishment of the conductive path across said band extending in the circumscribing relation thereof completely about said wall means and disposed between the at least one surface and the one face of the terminal section.

4,199,741
MOVING MAGNET, ROTARY SWITCH

Edouard Serrus Paulet, Casa Nostra, Pech des Treilles, Puylaroque, France (82240)

Filed Nov. 7, 1977, Ser. No. 849,635
Claims priority, application France, Nov. 5, 1976, 76 33485
Int. Cl.[2] H01H 9/00
U.S. Cl. 335—206 15 Claims

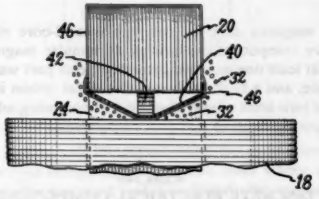


1. A rotary switch, comprising a stationary body having a longitudinal axis and having bores parallel with said axis, switching means arranged stationarily at least in proximity of an end of said bores, magnetic cores each placed in one of said bores and slidingly movable therein between two end positions each corresponding to a switching state of a corresponding switching means, an actuating element movable in rotation about said axis, and elements of magnetic material arranged in proximity to at least one end of said bores and driven in rotation by said actuating elements so as to be brought successively opposite the said ends of the bores for moving at least some of said cores and changing the switching states of the corresponding switching means.

4,199,742
BUBBLE DEFLECTOR FOR VAPOR COOLED TRANSFORMERS

Robert E. Gearhart, Rome, Ga., assignor to General Electric Company

Filed Jan. 18, 1979, Ser. No. 4,498
Int. Cl.[2] H01F 27/10
U.S. Cl. 336—58 3 Claims



1. A vapor-cooled transformer comprising a tank with a vaporizable liquid dielectric therein, a core with a coil thereon, an insulated member secured to the core between the core and coil and angled so as to deflect vapor bubbles forming in the coil away from the core.

4,199,743
ENCAPSULATED CURRENT TRANSFORMER

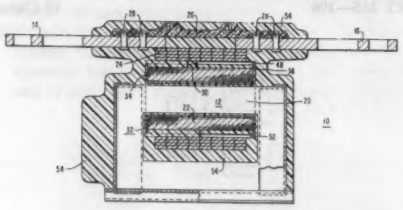
Paul W. Martincic, Hermitage Township, Mercer County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 6, 1978, Ser. No. 875,670
Int. Cl.[2] H01F 15/02
U.S. Cl. 336—96 5 Claims

1. An instrument transformer comprising:
a magnetic core;
primary and secondary electrical windings concentrically disposed in inductive relation about said magnetic core;

spacer means disposed between said primary and secondary electrical windings for holding said primary and secondary windings in fixed, spaced relation; and

a solid encapsulating material surrounding said magnetic core and said primary and secondary windings and filling the space between said primary and secondary windings;



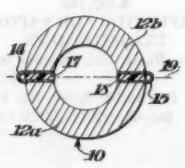
said spacer means being formed of a material which softens within the normal processing temperature range of said encapsulating material so as to form an amalgamation with said encapsulating material without a distinct interface therebetween.

4,199,744

MAGNETIC CORE WITH MAGNETIC RIBBON IN GAP THEREOF

Tomm V. Aldridge, and Richard M. Haas, both of Visalia, Calif., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jan. 2, 1979, Ser. No. 462
Int. Cl.[2] H01F *17/06, 27/24*
U.S. Cl. 336—178 **7 Claims**



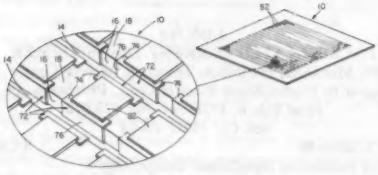
1. A magnetic core for use in a wound-core electrically-inductive component comprising an annular magnetic piece having at least one gap that extends at least part way through said piece; and a U-shaped magnetic metal ribbon in said gap with the two arms of said U-shaped ribbon being adjacent the two opposing faces of said gap, respectively.

4,199,745

DISCRETE ELECTRICAL COMPONENTS

Richard L. Barry, North Attleboro, Mass., assignor to TRX, Inc., Attleboro Falls, Mass.

Filed Dec. 15, 1977, Ser. No. 860,862
Int. Cl.[2] H01C *1/01*
U.S. Cl. 338—320 **5 Claims**



1. An array of electrical circuit components comprising a substrate having upper and lower surfaces, a plurality of apertures in said substrate extending through said substrate between said upper and lower surfaces,

discrete spaced electrical components on the upper surface of said substrate,

terminal pads on said lower surface of said substrate, at least two terminal pads corresponding to each electrical component, and

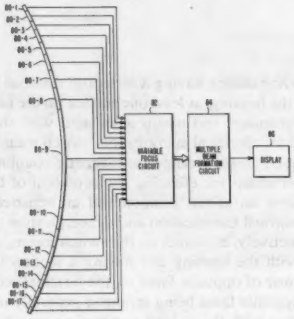
at least two discrete conductor strips extending along the walls of each said aperture, each said conductor strip electrically connecting a corresponding terminal pad to its associated electrical component.

4,199,746

SIDE LOOKING SONAR APPARATUS

Charles H. Jones, Pasadena, and George A. Gilmour, Severna Park, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 18, 1978, Ser. No. 897,324
Int. Cl.[2] G01S *9/66*
U.S. Cl. 367—135 **7 Claims**



4. Side looking sonar apparatus comprising:

(A) an elongated side looking sonar receiver transducer having an array of adjacent active elements, each having first and second ends, and each lying along a line;

(B) said transducer being positioned to intercept acoustic energy waves from a minimum range out to a maximum range of an insonified region, during operation of said apparatus;

(C) an end element of said array experiencing a phase differential of a certain magnitude, from one end of said element to its other, with respect to the phase contour of an impinging acoustic wave front emanating from said minimum range;

(D) remaining ones of said elements of said array being of respective lengths so as to likewise experience a phase differential from end to end, of said same certain magnitude with respect to said same phase contour of said impinging acoustic wave front.

4,199,747

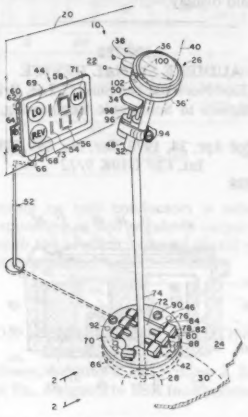
TRANSMISSION SHIFT-POSITION INDICATING SYSTEM FOR MOTOR TRUCKS

Scott Miller, 3111 Thornfield Rd., Baltimore, Md. 21207, and Larry R. Whitfield, 1560 Sherwood Ave., Baltimore, Md. 21239

Filed Jun. 15, 1978, Ser. No. 915,722
Int. Cl.[2] B60Q *1/26*
U.S. Cl. 340—74 **5 Claims**

1. In a system for transmission shift-position-indicating in a motor vehicle having: a shift position display, a lever for manual gear shifting on movement in sequence into plural respective gate positions; the lever including a shift knob, the shift knob having a tab rotatable relative thereto for selecting overdrive settings, and a range selector below the shift knob and

having a portion movable vertically between a first or high-range setting and a second or low-range setting of the transmission, the improvement comprising: a frame having plural gate positions, a plurality of switching means, means adjustably mounting a respective said switching means on said frame at each gate position in the path of said gear shifting movement for contact by said lever, said switch position display comprising a digital display, means operatively connecting each said switching means for causing said digital display to indicate a respective number for each lever contact in said sequence, the



frame having an opening therein for receiving said lever, said lever having pivotal attachment below the frame, means for vertically adjusting the frame relative to said gear shifting movement for simultaneously setting the position of all said switching means, means for individually adjusting plural of said switching means relative to the frame, said tab having plural switching positions corresponding to respective said overdrive settings, and said means operatively connecting having further connection for causing said digital display to indicate in said sequence each switching position as an overdrive setting.

4,199,748

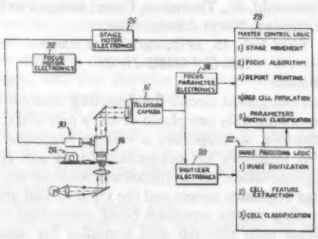
AUTOMATED METHOD AND APPARATUS FOR CLASSIFICATION OF CELLS WITH APPLICATION TO THE DIAGNOSIS OF ANEMIA

James W. Bacus, Hinsdale, Ill., assignor to Rush-Presbyterian-St. Luke's Medical Center, Chicago, Ill.

Continuation-in-part of Ser. No. 825,673, Aug. 18, 1977, Pat. No. 4,097,845, which is a continuation-in-part of Ser. No. 737,531, Nov. 1, 1976, abandoned. This application Feb. 3, 1978, Ser. No. 875,126

Int. Cl.[2] G06K *9/00*

U.S. Cl. 340—146.3 CA **99 Claims**



1. A method of automatically analyzing red blood cells in a sample of a patient's blood for an anemia or other red blood cell disorder comprising the steps of:

examining the red blood cells in patient's blood sample, measuring characteristics of blood cells and classifying normal and abnormal cells into a plurality of mutually exclusive subpopulations, determining parameters for the red blood cells in respective ones of said subpopulations, and comparing parameters of respective ones of the patient's red blood cell subpopulations with predetermined reference characteristic values of red blood cell subpopulations from a person having a known kind of anemia or other red blood cell disorder,

and reporting the results of the comparison to provide an indication of a specific anemia or red blood cell disorder or the lack thereof.

4,199,749

ANGLE CODER HAVING SPROCKET DRIVEN ENDLESS CODE TAPES FOR DETERMINING THE ANGULAR POSITION OF A ROTATABLE SHAFT

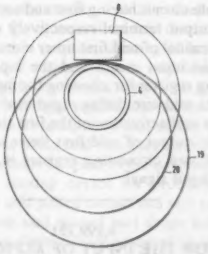
Hans Richter, Augsburg, Fed. Rep. of Germany, assignor to H. A. Schlatter AG, Schlieren, Switzerland

Filed Apr. 17, 1978, Ser. No. 897,069

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1977, 2718336; Jan. 3, 1978, 2800142

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 P **8 Claims**

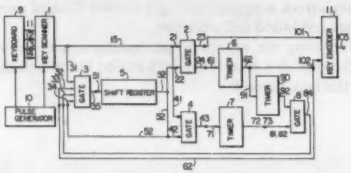


1. In an angle coder for digital-coded determination of angles of the type comprising a rotatable shaft whose angular position is to be measured, and a coding device connected to said shaft for rotation therewith, said coding device having coded indicia thereon which are read by a scanning unit, a different code word read by said scanning unit being associated with each angular position of the code carrier, the improvement wherein said coding device comprises cylinder means consisting of at least one cylinder coupled to said shaft for rotation with said shaft, said cylinder means having sprockets thereon, at least two code carriers which are moved concurrently by rotation of said cylinder means past the scanning unit, said code carriers comprising two endless flexible tapes overlying the periphery of said cylinder means and having sprocket holes therein which are engaged by said cylinder sprockets for positive drive and alignment of said flexible tapes and to maintain said tapes at fixed axial positions relative to said cylinder means as said cylinder means is rotated, said two endless tapes being so arranged that their positions relative to one another changes successively during successive revolutions of the shaft.

4,199,750
KEY INPUT CIRCUIT CAPABLE OF ROLL-OVER OPERATION

Tamio Taguchi, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Continuation of Ser. No. 657,236, Feb. 11, 1976, abandoned.
This application Jan. 13, 1977, Ser. No. 759,187
Claims priority, application Japan, Nov. 10, 1975, 50/134105
Int. Cl.[2] G08C 25/00; G06F 3/02
U.S. Cl. 340—365 E 17 Claims

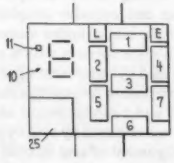


1. A key input circuit comprising:
input means for generating serialized key input signal corresponding to operated keys;
a circulating register with a predetermined delay time for circulating its content and giving a predetermined delay time to input signals for appearing at its output;
a first gate circuit for receiving the serialized key input signal from said input means and the output signal of said circulating register and generating an output corresponding to said key input signal using the output signal of said circulating register as an inhibitation signal;
a first timer circuit having an input line connected to said first gate circuit and an output line for supplying an output signal, activated by the output signal of said first gate circuit and generating an output after a predetermined time from the activation; and
a second gate circuit having first and second input terminals and an output terminal respectively connected with the output terminal of said first timer circuit, the output terminal of said input means and the input terminal of said circulating register for allowing the input of said key input signal into said circulating register after a predetermined time from said activation of the first timer circuit with the use of the output of said first timer circuit, wherein the output of said circulating register is synchronized with said key input signal.

4,199,751
DEVICE FOR THE INPUT OF ALPHANUMERICAL DATA FOR APPARATUS OF SMALL SIZE

Christian Piguet, Neuchatel, Switzerland, assignor to Centre Electronique Horloger SA, Neuchatel, Switzerland

Filed May 30, 1978, Ser. No. 910,759
Claims priority, application Switzerland, Jun. 8, 1977, 7033/77
Int. Cl.[2] G06F 3/02
U.S. Cl. 340—365 S 16 Claims

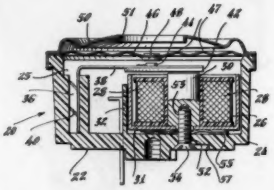


1. A device for the input of alphanumerical characters for apparatus of small volume with a keyboard, comprising:
zones and members for the introduction of characters;
a monitoring display with a plurality of luminous segments; and
electronic means coupled to said zones and members and said display, for memorising and decoding the characters;
each of said introduction zones being coupled with one segment of said monitoring display;
said electronic means enabling the characters to be formed segment by segment in response to actuation of said zones;
said zones being geometrically arranged on the keyboard so as to correspond directly to the arrangement of the segments of said display.

4,199,752
AUDIBLE SIGNAL DEVICE

John R. Lucas, East Norwalk, and Sung C. Lee, Bridgeport, both of Conn., assignors to Sonetronic Engineering, Inc., Dover, Del.

Filed Apr. 24, 1978, Ser. No. 899,538
Int. Cl.[2] G10K 9/12
U.S. Cl. 340—388 22 Claims



1. In an electric horn of the type including a housing having a base and sidewall, an acoustical diaphragm mounted on said housing, an electromagnetic coil and core assembly mounted within said housing, a resiliently mounted armature carried by said housing for reciprocating movement between said core and said diaphragm, and means for repetitively energizing and deenergizing said coil, the improvement which comprises:
first means for resiliently supporting said coil and core assembly in predetermined alignment with said base, said first means being centrally positioned in approximate axial alignment with said core and coil assembly and exerting a resilient force on said assembly,
second means acting upon said assembly and cooperating with said first means to selectively adjust the position of said assembly within said housing by controlling the effect of the resilient force exerted on said assembly by said first means, said second means being approximately centrally positioned with respect to said core and coil assembly for linearly adjusting the position of said core and coil assembly while substantially retaining said predetermined alignment with said base.

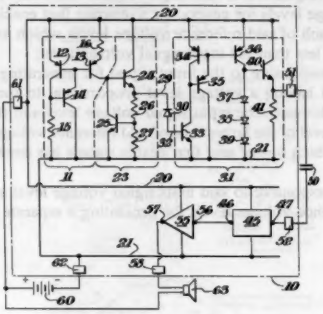
4,199,753
INTEGRATED CIRCUIT FOR DETECTING CHANGES IN LIGHT INTENSITY

Walter S. Gontowski, Jr., Thompson, Conn., assignor to Sprague Electric Company, North Adams, Mass.

Filed Feb. 15, 1978, Ser. No. 878,045
Int. Cl.[2] G08B 21/00
U.S. Cl. 340—555 8 Claims

1. A silicon integrated circuit for detecting changes in light intensity comprising only one photo-diode; a pair of d.c. power supply conductors; an amplifier; a voltage regulator means; and a pair of terminals for connecting to an a.c. coupling means; said photo-diode being connected between the output of said voltage regulator means and the input of said amplifier, said a.c. coupling means terminals being connected in series with the signal path through said amplifier for selectively passing only the varying components of the signal generated by said photodiode, said voltage regulator means being con-

nected across said power conductors for providing a regulated d.c. output voltage that is essentially a log-log function of a d.c. supply voltage across said conductors whereby any noise

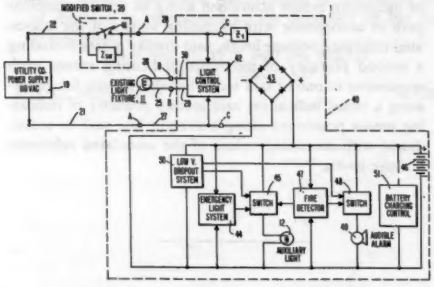


voltage appearing on said conductors is substantially prevented from appearing at said regulator output wherefrom it may pass through the junction capacity of said photo-diode to the input of said amplifier.

4,199,754
CIRCUIT FOR AN EMERGENCY LIGHTING AND FIRE DETECTOR SYSTEM

Robert W. Johnson, Levittown, and William J. Raddi, Philadelphia, both of Pa., assignors to ESB Incorporated, Wilmington, Del.

Filed Nov. 21, 1977, Ser. No. 853,468
Int. Cl.[2] G08B *17/00, 7/00*
U.S. Cl. 340—577 **14 Claims**



1. A safety system for installation in a building, said system having a fire detector and an emergency lighting system for providing light when building electrical power to the safety system is interrupted or fire is detected, said safety system comprising:

(a) a rectifying means connected to the building electrical power for converting it to direct current;

(b) at least one battery;

(c) means for connecting at least one battery to the rectifying means so that it is charged;

(d) fire detector means connected across the at least one battery, said fire detector means producing an output signal upon sensing of a fire;

(e) audible alarm means;

(f) first switching means, responsive to the output signal from the fire detector, for connecting the alarm means across the at least one battery to activate the alarm when a fire is detected;

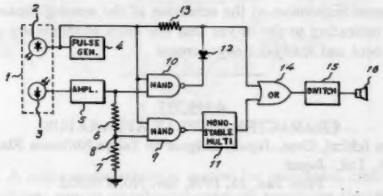
(g) auxiliary light means; and

(h) second switching means, responsive to the voltage and/or current level of the direct current output from the rectifying means, for connecting the auxiliary light means across the at least one battery when said voltage and/or current level falls below a predetermined low level, said second switching means also responsive to the detector output signal for connecting the auxiliary light means across the at least one battery to provide lighting when fire is detected.

4,199,755
OPTICAL SMOKE DETECTOR

Hiroshi Tanaka, Tokyo, Japan, assignor to Nittan Company, Ltd., Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,365
Claims priority, application Japan, Oct. 28, 1977, 52-129456
Int. Cl.[2] G08B *17/10*
U.S. Cl. 340—630 **2 Claims**



1. An optical smoke detector comprising a detection chamber allowing entrance of smoke but inhibiting entrance of external light, a pulse generator for producing a pulsed output, a light source connected to said pulse generator and actuated by said pulsed output for emitting a pulsed light in said detection chamber, a light sensing device including a photoelectric element located so that it is not illuminated directly by said light source but can receive a first part of said pulsed light which is scattered by the smoke and a second part thereof which is reflected by the inner wall of said detection chamber for producing a detection output consisting of first and second parts which correspond respectively to said first and second parts of the pulsed light, first means coupled to the outputs of said pulse generator and light sensing device for producing a first output in response to said pulsed output and said first part of the detection output when said first part exceeds a predetermined level, second means coupled to the outputs of said pulse generator and light sensing device for producing a second output in response to said pulsed output and said second part of detection output when said second part drops below a predetermined level, and an alarm device actuated by at least one of said first and second outputs.

4,199,756
GUIDE APPARATUS FOR TRAILER HITCH

Rudolph D. Dito, 401 Buck Ave., Vacaville, Calif. 95688

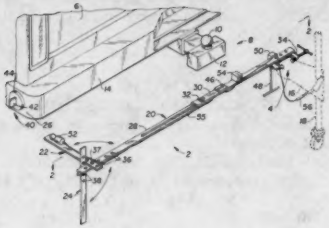
Filed Jun. 19, 1978, Ser. No. 916,628
Int. Cl.[2] G08B *21/00*; B60Q *1/00*
U.S. Cl. 340—686 **18 Claims**

1. Apparatus for guiding the driver of a towing vehicle in positioning a first hitch element on the towing vehicle adjacent a complementary second hitch element on a trailer so that they can be readily engaged, the apparatus comprising:

arm means adapted to be mounted to the trailer and having a first portion extending transversely from the second hitch element to beyond the side of the towing vehicle and a second portion attached to the first portion and extending forwardly closely adjacent the side of the towing vehicle to indicate to the driver when the towing vehicle and the trailer are transversely aligned;

sensing means mounted proximate the second hitch element and adapted to be actuated by the first hitch element as the towing vehicle and trailer are moved into positions in

alignment with one another as established by the arm means so that their hitch elements are adjacent; and



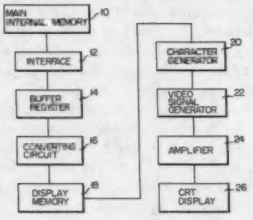
means responsive to the actuation of the sensing means for indicating to the driver that the hitch elements are adjacent and ready for engagement.

4,199,757

CHARACTER DISPLAY APPARATUS

Akira Ichimi, Ome, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Jan. 19, 1978, Ser. No. 870,652
Claims priority, application Japan, Jan. 21, 1977, 52-5480
Int. Cl.[2] G06K *15/20*
U.S. Cl. 340—750 **3 Claims**



1. A character display apparatus comprising: a temporary memory unit for temporarily storing internal data read out from a memory unit; a converting circuit for converting every given length of said internal data supplied from said memory unit into numerical information, said converting circuit including a plurality of ROMs for receiving information signals of the same number of bits produced by dividing said internal data sent from said memory unit and for producing said numerical information in terms of an alphanumerical code in accordance with said information signals, a plurality of buffer memories for temporarily storing said numerical information delivered from said ROMs and said converting circuit further comprising a selector circuit for reading out said numerical information from said buffer memory in a given succession; and a display unit for displaying said numerical information delivered from said converting circuit in terms of an alphanumerical code in accordance with the contents of said numerical information.

4,199,758

SOLID STATE INDICATING APPARATUS

Donald F. Wilhelm, and William J. Jones, Jr., both of Toledo, Ohio, assignors to Helm Instrument Co., Inc., Toledo, Ohio

Filed May 4, 1978, Ser. No. 902,872
Int. Cl.[2] G06K *15/18*
U.S. Cl. 340—753 **16 Claims**

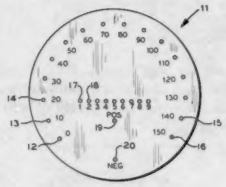
1. An apparatus for indicating a quantity of information represented by an input signal having a voltage level proportional to the quantity, the apparatus comprising:

means for generating a plurality of reference voltage levels;

means responsive to the input signal and said reference voltage levels for generating a separate first enable signal for each of said reference voltage levels which are equal to or less than the input signal voltage level;

means responsive to the input signal for generating a units signal having a voltage level proportional to the difference between the input signal voltage level and the voltage level of the largest one of said reference voltage levels for which one of said first enable signals has been generated;

means responsive to said units signal voltage level and said reference voltage levels for generating a separate second



enable signal for each of said reference voltage levels which are equal to or less than said units signal voltage level; and

display means including a first plurality of individual indicating means each responsive to one of said first enable signals for generating a visual indication, said first plurality of indicating means positioned along an arc of a circular path in accordance with ascending values of the associated reference voltage levels, said display means including a second plurality of individual indicating means each responsive to one of said second enable signals for generating a visual indication, said second plurality of indicating means positioned along a straight line path in accordance with ascending values of the associated reference voltage levels.

4,199,759

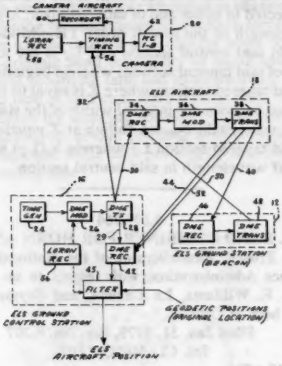
SYSTEM FOR CORRELATING ELECTRONIC DISTANCE MEASUREMENT AND AERIAL PHOTOGRAPHY FOR THE EXTENSION OF GEODETIC CONTROL

Donald I. Zulch, Oneida, and Robert Brock, Marcellus, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 10, 1978, Ser. No. 932,813
Int. Cl.[2] G01S *9/02*
U.S. Cl. 343—6 R **1 Claim**

1. A system for correlating electronic distance measurement and aerial photography for the extension of geodetic control comprising; a plurality of electronic distance measuring stations positioned at precisely located points around an area of unknown geodetic control; a plurality of signal beacons located within area of unknown geodetic control; an airborne electronic location station having means for transmitting and receiving signals to and from said stations and said beacons; means carried by said airborne station for calculating distance, from said stations and beacons; and means for photographing

the airborne electronic location station as it calculates its distance to stations and beacons, whereby said correlated precision measurement information and photographic data are suitable for photogrammetric analysis.

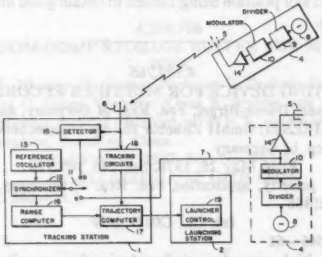


4,199,760

METHOD FOR MEASURING RANGE TO A ROCKET IN FLIGHT EMPLOYING A PASSIVE GROUND TRACKER STATION

John A. French, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 15, 1978, Ser. No. 942,721
Int. Cl.² G01S 11/00
U.S. Cl. 343—112 D **2 Claims**



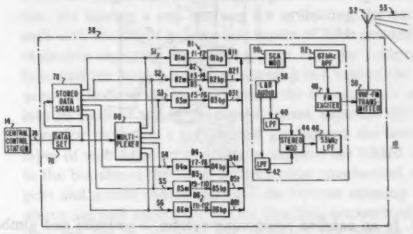
1. A method of determining the range of a vehicle in relationship to a receiving station comprising the steps of generating identical frequency signals in both the receiving station and the vehicle; comparing these signals prior to the vehicle leaving the receiving station; transmitting the frequency signals generated in the vehicle to said receiving station; determining the range of said vehicle after it has left the receiving station by comparing the difference in the time of arrival of the signal from said vehicle as received by said receiving station with the receiving station generated frequency signal; syncronizing the two frequency signals prior to the vehicle leaving said receiving station; sensing the azimuth and elevation of said vehicle; combining this information with the range information; and using the range, azimuth and elevation to determine the precise trajectory of the vehicle.

4,199,761

MULTICHANNEL RADIO COMMUNICATION SYSTEM FOR AUTOMATED POWER LINE DISTRIBUTION NETWORKS

Ian A. Whyte, Churchill Borough, Pa., and Richard F. Cook, Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 2, 1978, Ser. No. 930,294
Int. Cl.² H04B 7/00
U.S. Cl. 340—695 **10 Claims**



8. A radio communication system for automated control of an electric power distribution network supplying electric energy to customer remote locations, said radio communication system comprising:

commercial VHF-FM broadcast signal transmitting means producing electromagnetic radiations extending to said remote locations;

first modulation means for modulating the transmitted broadcast signal with information included in a composite broadcast channel including both a broadcast station program main channel and an SCA auxiliary channel;

a source of binary data signals designating energy usage related command functions, said data signals varying between two binary levels at a rate defining a predetermined data bit rate with said data signals including either of two signal formats wherein a first signal format includes a predetermined number of data bits with at a portion thereof having a function code and a second signal format includes a continuous bit stream;

second modulation means for producing a pair of two tone signals having frequencies harmonically related to each other and to said predetermined data bit rate when produced to shift between the two tone signals in response to changes between the two levels of one of said data signals, said second modulation means including means for phase synchronizing the transitions occurring in the shifts between each of said pair of two tone frequencies in response to changes in the two levels of said one data signal;

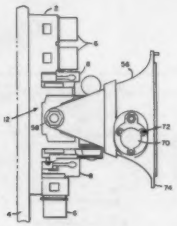
third modulation means including a subcarrier included in said auxiliary channel with said subcarrier having a predetermined frequency wherein the subcarrier frequency is harmonically related to both the frequency values of said two tone signals of said one data signal, said third modulation means modulating said subcarrier with said pair of two tone signals of said second modulation means, the output of said third modulation means being applied to said first modulation means for modulating the information of said auxiliary channel on said transmitted broadcast signal; and

energy management terminal means located at said customer remote locations and including radio receiver means receiving said electromagnetic radiations, two tone detector means for detecting said one binary data signal, and control means having an energy usage related control function at an associated remote location with said control means being activated by said one of said data signals.

4,199,762
PEDESTAL AND GIMBAL ASSEMBLY

Raymond J. Estlick, Winchester, and Oscar E. Swenson, Concord, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 18, 1977, Ser. No. 797,977
Int. Cl.[2] H01Q 1/18
U.S. Cl. 343—765 **6 Claims**

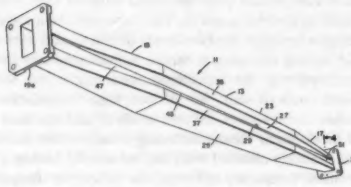


1. In an antenna positioning system, a pedestal and gimbal assembly for supporting components of the system including an antenna assembly and three gyros comprising: a pedestal; an inner gimbal assembly including a support for mounting said antenna assembly and said gyros; a yaw torque motor assembly carried by said inner gimbal and having a pair of hollow output shafts for supporting said inner gimbal and controlling the yaw movement therefor; a pitch motor housed in said pedestal and having a drive pinion and a drive shaft, said drive pinion connected to said drive shaft; and, means connected between said drive pinion and said yaw motor assembly for controlling the pitch movement of said antenna assembly.

4,199,763
ELECTRICAL-LENGTH EQUALIZER FOR HORN ANTENNAS

James J. Epis, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1972, Ser. No. 228,179
Int. Cl.[2] H01Q 13/00
U.S. Cl. 343—778 **7 Claims**



1. An electrical-length equalizer waveguide for a pair of horn antennas including a standard waveguide section, said equalizer comprising:

(a) a uniform doubly-ridged central waveguide device;

(b) a first tapered doubly-ridged waveguide section located at one end of said central section;

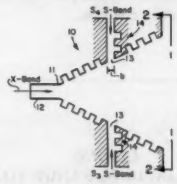
(c) a second tapered doubly-ridged waveguide section located at other end of said central section;

(d) said first and said second waveguide sections each comprising two opposed and diverging ridges located within said first and said second tapered waveguide sections wherein the propogation cut-off wavelength $\lambda_c(Z)$ at all Z axis locations in said first and said second tapered sections varies continuously such that said propogation cut-off wavelength $\lambda_c(Z)$ is equal to $2a_o+(\lambda cR-2a_o)/L_T(Z)$ wherein a_o is the internal width of the standard waveguide connected to either end of said equalizer; λ_{cR} is the cut-off wavelength of the lowest order TE_{10}-Mode of propogation in said central section and L_T is the axial length of each of said tapered sections wherein beginning at one end of said tapered sections where Z is equal to zero and $\lambda_c(O)$ is equal to twice the internal width of the standard rectangular waveguide $2a_o$ and ending at Z equaling the length of said tapered section L_T wherein $\lambda_c(L_T)$ is equal to the cut-off wavelength in said central section.

4,199,764
DUAL BAND COMBINER FOR HORN ANTENNA

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; William F. Williams, La Canada, and Seymour B. Cohn, Encino, both of Calif.

Filed Jan. 31, 1979, Ser. No. 8,207
Int. Cl.[2] H01Q 13/00
U.S. Cl. 343—786 **9 Claims**



6. A dual band antenna operable at two widely spaced frequency bands with nearly identical radiation patterns comprising a corrugated horn and a combiner to excite said horn in its two frequency bands, and operating in a beamwidth saturation mode, said combiner having a low loss at the band excited through the apex of the horn of less than 0.02 dB and being comprised of a circumferential feed slot with circumferential choke slots for the other band being diplexed, said circumferential feed slot position being chosen to obtain good impedance matching.

4,199,765
PRINTING DEVICE FOR MULTIPLE RECORDERS

Paul Freude, Düren-Birgel, Fed. Rep. of Germany, assignor to DIA-NIELSEL GmbH Zubehör für die Messtechnik, Düren, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,738
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725456
Int. Cl.[2] G01D 9/34
U.S. Cl. 346—61 **11 Claims**

1. A multiple recorder printing device for recording values of variable amounts on a moving recording tape in the form of consecutive symbols of different colors, said device comprising:

(a) support means;

(b) a rocking lever pivotally mounted on said support means for oscillating movement about an axis;

(c) a unitary rotary printing head and gear rotatably mounted on an arm of said rocking lever at a position spaced from said pivot axis, said printing head including a plurality of spaced printing tips about its periphery;

(d) a cam plate and a pinion mounted on said support means for rotation about a common axis spaced from said pivot axis, said cam plate having a plurality of recesses therein;

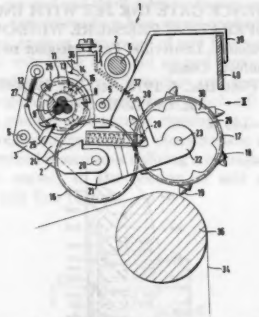
(e) drive means for driving said cam plate;

(f) means permitting free limited relative rotational play between said pinion and said cam plate;

(g) an intermediate gear rotatably mounted at said pivot axis and engaging said pinion and gear whereby said drive means drives said printing head;

(h) means on said rocking lever arranged to engage said cam plate including the succession of recesses therein as said cam plate rotates causing said rocking lever to oscillate and said printing head repeatedly to move towards and contact said recording tape and to move away from said recording tape as said cam plate rotates; and

(i) detent means for stopping rotation of said printing head during movement of said printing head towards said recording tape and while each printing tip is in contact with said recording tape;



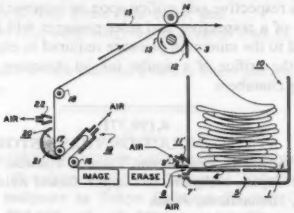
(j) the amount of said free limited relative rotation between said pinion and said cam plate being sufficient such that the entering of said cam engaging means in a recess in said cam plate, and the resultant pivoting of said rocking lever, movement of said printing head towards said recording tape and contact of a printing tip with said recording tape while rotation of said printing head is stopped by said detent means, simultaneously causes the rotation of said pinion to be accelerated with respect to said cam plate and any further rotation of said pinion and printing head to be suspended until after said printing head has been moved away from said recording tape.

4,199,766

RANDOM-DUMP STORAGE BUFFER FOR MOVING WEB

Daniel F. Blossey, Rochester; Narayan V. Deshpande, Penfield; Eugene C. Fancz, Webster; Klaus K. Stange, and Stanley B. Swackhamer, both of Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 28, 1977, Ser. No. 772,703
Int. Cl.[2] G01D *15/12*; G11B *15/56*
U.S. Cl. 346—74.1 **4 Claims**



1. Magnetic printing apparatus comprising

a continuous web of flexible magnetic tape capable of retaining a plurality of latent magnetic images thereon in a pre-collated form,

transport means for moving at a substantially constant speed the continuous web over a path less than the length of the tape,

developing means for depositing graphic material on the web to develop the latent magnetic images into visible graphic material images,

transfer means for transferring graphic material images from the web to a receiving member,

web tensioning means for exerting a tension in the moving web to assist tracking of the web on the transport means and

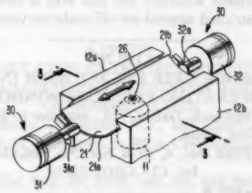
a storage buffer for temporarily storing that portion of excess web longer than the transport path including a collection bin having a top opening for collecting the excess web with the aid of gravity into layers of folds created by randomly dumping the moving web into the collection bins, said bin having a bottom opening in a wall of the bin near the floor of the bin for exiting the moving web back into its path of travel, floatation means adjacent the bin floor for directing a pressurized gas against the bottom layer of web adjacent the floor to support the folded web in the bin above the floor without other mechanical support and nozzle means adjacent the bottom opening and above the web exiting the bin for directing pressurized gas into the bin to maintain the shape of the bottom fold within the bin as the web exits the bin to enable the floatation means to support the folded web.

4,199,767

NOZZLE VALVE FOR INK JET PRINTERS

Alan S. Campbell, and Jack H. Jennings, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 21, 1979, Ser. No. 12,987
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **17 Claims**



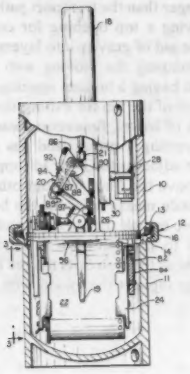
1. In an ink jet printer including a nozzle for emitting a stream of ink drops, said nozzle including means defining an outlet orifice, improved apparatus for controlling the emission of the said stream, said improved apparatus comprising valve means at said means defining an outlet orifice, said valve means including a gate member mounted for movement with respect to said means defining said outlet orifice but adjacent thereto, said gate member movable between a first position allowing an uninhibited emission of a stream of ink drops from said outlet orifice of said nozzle and a second position sealing said outlet orifice; said means defining said outlet orifice of said nozzle serving as a seat for said gate member when said member is in said second position, and means biasing said gate member into the sealing engagement with said seat at least when said gate member is in said second position.

4,199,768

PORTABLE COMPACT STRIP CHART RECORDER WITH LOST-MOTION PROTECTIVE CONNECTION TO TRANSDUCER

Jerry E. Johnson, Bellevue, Wash., assignor to Ryan Instruments, Inc., Kirkland, Wash.

Division of Ser. No. 794,759, May 9, 1977, Pat. No. 4,141,019.
This application Dec. 8, 1978, Ser. No. 967,681
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—139 R 2 Claims



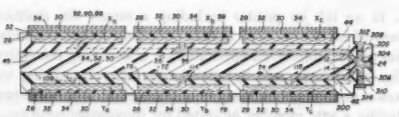
1. A portable compact strip chart recorder comprising:
a case having a removable cover,
a clockworks in said case,
a drive unit coupled to said clockworks,
a strip chart connected to said drive unit for transporting the strip chart in a timed movement,
a transducer for measuring an environmental parameter,
a pen arm movable over and against the strip chart for recording information on the strip chart,
linkage means coupling the pen arm to said transducer for correlated movements between the two, means for restricting off scale movements of the pen arm, said linkage means including release means for allowing movement of the transducer relative to the pen arm under abnormal measurements whereby the pen arm is not over stressed when restricted against an off scale movement.

4,199,769

COINCIDENCE GATE INK JET WITH INCREASED OPERATING PRESSURE WINDOW

Kenneth H. Fischbeck, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1978, Ser. No. 966,434
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R 8 Claims



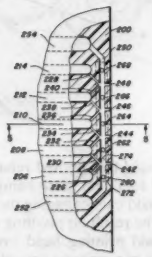
1. An array of coincidence gate ink jets comprising: a housing, a plurality of laterally spaced apart outlet orifices in said housing, each of said orifices having first and second orifice inlet passages communicated therewith, said first and second inlet passages intersecting each other adjacent said orifice, the axis of each of said first and second inlet passages at said intersection being at an angle with the axis of its respective said orifice, all of said axes being in a first general plane generally parallel to the lateral direction, a pressure absorbing chamber for each orifice having at least a portion thereof located between a respective said intersection and a respective said orifice and positioned that the axes of said passage means for a respective said orifice passes therethrough, and means for allowing fluid displacement in each said absorbing chamber, whereby the minimum pressure required to express a droplet through a respective said orifice upon an increase in pressure in only one of a respective said inlet passage will be increased compared to the minimum pressure required to express a droplet from the orifice of a similar ink jet structure without the absorbing chambers.

4,199,770

COINCIDENCE GATE INK JET WITH INCREASED OPERATING PRESSURE WINDOW

Marcus M. Schnarr, Lewisville, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1978, Ser. No. 966,435
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R 8 Claims



1. An array of coincidence gate ink jets comprising: a housing, a plurality of laterally spaced apart outlet orifices in said housing, each of said orifices having first and second orifice inlet passages communicated therewith, said first and second inlet passages intersecting each other adjacent said orifice, the axis of each of said first and second inlet passages at said intersection being at an angle with the axis of its respective said orifice, said axis of each orifice and its respective inlet passages being in a first general plane generally parallel to the lateral direction, a fluid chamber extending in the lateral direction and being in communication with and interposed between each of said intersections and a respective said orifice, an absorbing chamber located between each pair of adjacent orifices and intersecting said laterally extending fluid chamber, the axis of each absorbing chamber being in a second plane which is generally transverse to said first plane, and means for allowing fluid displacement in each of said absorbing chambers, whereby the minimum pressure required to express a droplet through a respective said orifice upon an increase in pressure in only one of a respective said inlet passages will be increased compared to the minimum pressure required to express a droplet from the orifice of a similar ink jet structure without the absorbing chambers.

4,199,771

STATIC INDUCTION TRANSISTOR

Jun-Ichi Nishizawa, Sendai, and Takashi Yoshida, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 4, 1978, Ser. No. 893,537
Claims priority, application Japan, Apr. 13, 1977, 52-41550
Int. Cl.[2] H01L *29/74*
U.S. Cl. 357—22 23 Claims

1. In a semiconductor device of the type comprising:
a first semiconductor region of a first conductivity type and

having a first predetermined doping characteristic and first predetermined dimensions;

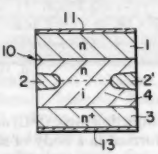
a second semiconductor region of a conductivity type not opposite to said first conductivity type and having a second predetermined doping characteristic and second predetermined dimensions;

a third semiconductor region of said first conductivity type having a third predetermined doping characteristic and third predetermined dimensions;

said first, second and third semiconductor regions being relatively disposed such that said first semiconductor region is adjacent said second semiconductor region and said second semiconductor region is adjacent said third semiconductor region to provide a current path through said first, second and third semiconductor regions; and

gate means, responsive to a bias signal applied thereto, for producing, even at zero value of said bias signal, a depletion layer extending into said second semiconductor region to define a current channel in said second semiconductor region and at least nearly pinch off said current path at a point in said current channel;

said first predetermined doping characteristic and said first predetermined dimensions defining a resistance parameter R_{sr} with respect to the portion of said current path through said first region;



said second predetermined doping characteristic and second predetermined dimensions in conjunction with said gate means defining a resistance parameter R_{sc} with respect to the portion of said current path through said second semiconductor region between said first semiconductor region and the beginning of said current channel along said current path closest to said first semiconductor region and defining a resistance parameter R_c with respect to the portion of said current path through said second semiconductor region between said beginning of said current channel and said point in said current channel whereat said depletion layer at least nearly pinches off said current path;

said device exhibiting an apparent transconductance G_m' related to the true transconductance of said device as $G_m'=G_m/\{1+(R_{sr}+R_{sc})G_m\}$;

the improvement wherein:

said first and second doping characteristics, said first and second dimensions are of values such that, over a substantial portion of the operational range of said device:

the product $R_c \cdot G_m$ is less than unity; and

the product $(R_{sr}+R_{sc}+R_c)\cdot G_m$ is greater than or equal to unity;

whereby said device exhibits a nearly linear current-voltage response.

4,199,772

SEMICONDUCTOR MEMORY DEVICE

Kenji Natori, Kamakura, and Fujio Masuoka, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Nov. 1, 1977, Ser. No. 847,542
Claims priority, application Japan, Nov. 17, 1976, 51-138180
Int. Cl.² H01L 29/78
U.S. Cl. 357—23 **11 Claims**

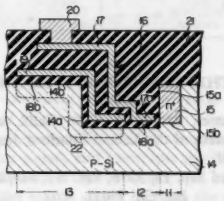
1. A semiconductor memory device having a plurality of unit memory cells interconnected by word lines and digit lines, with each cell comprising:

(a) a substrate of first conductivity type, said substrate including a planar first surface region and a second surface region which defines a recess in said first surface region;

(b) a region of second conductivity type defining a first portion of said first surface region and extending into said substrate;

(c) a capacitor insulating layer covering both a second portion of said first surface region and a contiguous first portion of said second surface region, said second surface region being interposed between said first and second portions of said first surface region;

(d) a capacitor electrode provided on said capacitor insulating layer to convert said substrate adjacent said second portion of said first surface region and said first portion of said second surface region from said first conductivity



type to said second conductivity type upon application of a voltge to said capacitor electrode;

(e) a gate insulating layer covering a second portion of said second surface region; and

(f) a gate electrode on said gate insulating layer and insulated from said capacitor electrode for connection to a word line of said semiconductor memory cell,

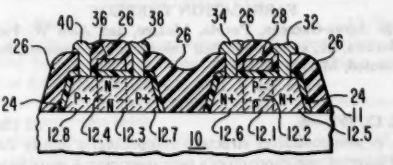
said region of second conductivity type forming one of a source and drain of a metal oxide semiconductor transistor for connection to a digit line of said memory device, said gate insulating layer forming a gate of said transistor, and said substrate adjacent said capacitor insulating layer forming the other of said drain and source of said transistor; and said substrate adjacent said second portion of said first surface region and said first portion of said second surface region, said capacitor insulating layer, and said capacitor electrode forming a MOS capacitor.

4,199,773

INSULATED GATE FIELD EFFECT SILICON-ON-SAPPHIRE TRANSISTOR AND METHOD OF MAKING SAME

Alvin M. Goodman, Princeton, N.J., and Charles E. Weitzel, Scottsdale, Ariz., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1978, Ser. No. 938,266
Int. Cl.² H01L 29/72
U.S. Cl. 357—23 **10 Claims**



1. In a semiconductor having an insulative substrate and a major surface associated therewith, a plurality of islands of semiconductive material affixed to the major surface of the substrate; each island having:

a top surface substantially parallel to the major surface of the substrate;

spaced drain and source regions of one conductivity type; and

a channel region associated with a spaced drain and source region and having an opposite conductivity type;

the improvement comprising:

a first part of the channel region, extending from the source region to the drain region and adjacent to the major surface having a given, heavy concentration of dopant atoms therein sufficient to prevent back channel leakage between the source and drain; and

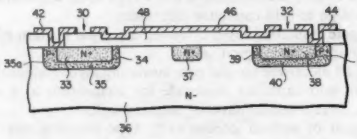
a second part of the channel region, coextensive with the first part of the channel region, located between the first part of the channel region and the top surface thereof, having a second, lighter concentration of dopant atoms than the first part and sufficient to allow inversion at the top surface.

4,199,774

MONOLITHIC SEMICONDUCTOR SWITCHING DEVICE

James D. Plummer, Mountain View, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 18, 1978, Ser. No. 943,200
Int. Cl.² H01L 7/02
U.S. Cl. 357—41 **25 Claims**



1. A monolithic semiconductor device comprising:

a semiconductor body having at least one major surface and

a body region adjacent to said surface of one conductivity type, first and second spaced regions of opposite conductivity type formed in said body region and abutting said major surface, third and fourth regions of said one conductivity type formed in said first and second regions, respectively, abutting said major surface and defining first and second channel regions in said first and second regions, respectively,

a layer of insulation on said major surface,

a gate electrode formed on said layer of insulation and above said first and second channel regions, an ohmic contact to said first and third regions, and an ohmic contact to said second and fourth regions.

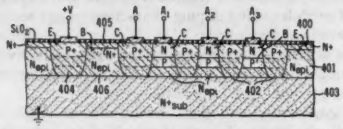
4,199,775

INTEGRATED CIRCUIT AND METHOD FOR FABRICATION THEREOF

Jorge Agraz-Guerena, Puebla, Mexico, and Alan W. Fulton, Batavia, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 3, 1974, Ser. No. 502,674
Int. Cl.² H01L 27/10
U.S. Cl. 357—46 **22 Claims**

1. A semiconductor structure comprising: a lightly doped first layer of one conductivity type overlying a more heavily doped second layer of said one conductivity type; at least one region of the opposite conductivity type extending through said first layer and shaped to encircle a corresponding selected region thereof, a further region of the said opposite conductivity type within said encircled region between but spaced apart from the surfaces of said first layer and extending to said through-extending encircling region, and a metallized contact



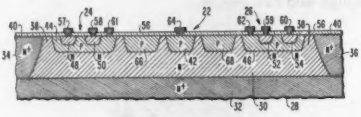
at the exposed surface of said first layer and overlying a part of a corresponding encircled region.

4,199,776

INTEGRATED INJECTION LOGIC WITH FLOATING REINJECTORS

Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 24, 1978, Ser. No. 936,409
Int. Cl.² H01L 27/04; H03K 19/08
U.S. Cl. 357—46 **4 Claims**



1. In an integrated injection logic (I^2L) device having at least two gate structures formed in a body of semiconductor material, each of said gate structures including a first region of one type conductivity disposed adjacent to a surface of said body and having an injector region and a base region of the opposite type conductivity disposed therein adjacent to said surface, said base region being apart from said injector region and having at least one collector region of the one type conductivity disposed therein adjacent to said surface, wherein the injector regions of said gate structures are connected in parallel to a single input electrode, the improvement in said device comprising:

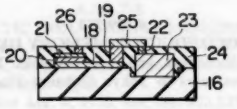
each of said gate structures having a second region of the opposite type conductivity disposed in said first region adjacent to said surface between said injector and said base regions, said second region being an electrically-floating region free of any contact electrode and having a width greater than the width of the injector region.

4,199,777

SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THE SAME

Eiichi Maruyama, Kodaira, and Hideaki Yamamoto, Hachioji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 2, 1977, Ser. No. 764,845
Claims priority, application Japan, Feb. 2, 1976, 51/9381
Int. Cl.² H01L 29/06
U.S. Cl. 357—55 **22 Claims**



1. A semiconductor device comprising:

a substrate containing at least two semiconductor elements made of semiconductor materials different from each other, one of said elements being disposed and fixed in a

first recess provided in said substrate by a hardened fluid material, and the other element being disposed in a second recess provided in said substrate, wherein said one element is finished semiconductor chip made of a material different from that of the substrate;

an insulating film disposed on said substrate and said elements and having apertures extending therethrough exposing surface portions of said elements wherein the top surface of the insulating film provides a flat surface free of steps between the apertures; and

conductive material disposed on said insulating film and extending through said apertures so as to be in contact with both of said elements so that the conductive material forms a flat connection free of any steps over the insulating film between said elements.

4,199,778

INTERCONNECTION STRUCTURE FOR SEMICONDUCTOR INTEGRATED CIRCUITS

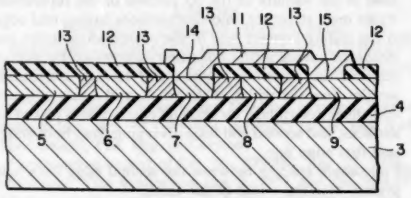
Toshiaki Masuhara, Hachioji; Tokumasa Yasui, Kodaira; Yoshio Sakai, Hachioji; Joh Nakajima, Kodaira; Yasunobu Kosa, Kodaira; Satoshi Meguro, Kodaira, and Masaharu Kubo, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 19, 1977, Ser. No. 843,366

Claims priority, application Japan, Oct. 22, 1976, 51-126051

Int. Cl.[2] H01L *29/04, 23/48, 29/44*

U.S. Cl. 357—59 **7 Claims**



1. An interconnection structure for a semiconductor integrated circuit, comprising:

a semiconductor substrate,

a first insulating film which is provided on said semiconductor substrate,

low resistance polycrystalline silicon interconnections which have a predetermined pattern and which are provided on said first insulating film,

a high resistance polycrystalline silicon layer which has substantially the same height as that of said low resistance polycrystalline silicon interconnections and which is provided on said first insulating film, in contact with the low resistance polycrystalline silicon interconnections, and in at least regions surrounding through-holes,

a second insulating film which is provided so as to cover the low resistance polycrystalline silicon layer and said high resistance polycrystalline silicon layer except said through-holes, and

metal interconnections which are provided on said second insulating film and which lie in electrical contact with said low resistance polycrystalline silicon interconnections through said through-holes.

4,199,779

VIR-SIGNAL PROCESSING CIRCUITRY FOR VIDEO TAPE RECORDER

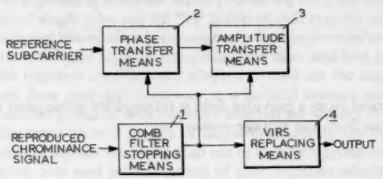
Yoshitomi Nagaoka, Neyagawa, and Masaaki Kobayashi, Kawanishi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 4, 1978, Ser. No. 949,552

Claims priority, application Japan, Oct. 12, 1977, 52-122651; Oct. 14, 1977, 52-123764

Int. Cl.[2] H04N *5/79, 5/78*

U.S. Cl. 358—8 **6 Claims**



1. A VIR-signal processing circuitry for a VTR having a comb filter, for obtaining a correct operation of the VIR circuit incorporated in a television receiver, comprising:

a comb filter stopping means which receives the reproduced chrominance signal, and interrupts the comb filtering on the line on which VIRS is placed;

a phase transfer means which receives the output signal of said comb filter stopping means and the reference subcarrier, and transfers the phase information of the VIRS to said reference subcarrier after elimination of crosstalk components by integration of the VIRS;

an amplitude transfer means which receives the output signal of said comb filter and the output signal of said phase transfer means, and transfers the amplitude information of the VIRS to said output signal of said phase transfer means after elimination of crosstalk components by integration of the VIRS; and

a VIRS replacing means which (a) receives the output signal of said comb filter stopping means and the output signal of said amplitude transfer means, and (b) deletes said output signal of said comb filter stopping means on the line on which VIRS is placed, and (c) forms the new chrominance reference by gating said output signal of said amplitude transfer means, and (d) inserts said new chrominance reference on said output signal of said comb filter stopping means whose signal on the line on which VIRS is placed is deleted.

4,199,780

VIDEO DROP OUT COMPENSATOR INCORPORATING DIGITAL FIELD STORAGE

Richard J. Taylor, London, England, assignor to Quantel Limited, Berkshire, England

Filed Oct. 20, 1978, Ser. No. 953,324

Claims priority, application United Kingdom, Oct. 27, 1977, 44781/77

Int. Cl.[2] H04N *5/76*

U.S. Cl. 358—8 **12 Claims**

1. A drop out compensation system for video information derived from a plurality of picture elements within a video field or frame, comprising:

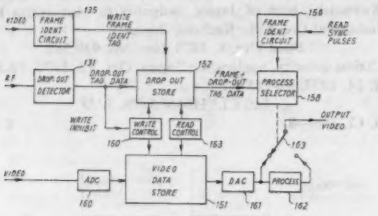
digital storage means for storing video information from one or more video fields;

control means for controlling writing and reading of the video information into and from the storage means respectively;

detector means for detecting the presence of a drop out on an incoming signal; and

inhibit means for selectively inhibiting the control means to prevent writing in of the incoming video information into

the storage means whenever a drop out is detected whereby information for the corresponding picture element from a previous field is retained for subsequent read out from the storage means.



4,199,781

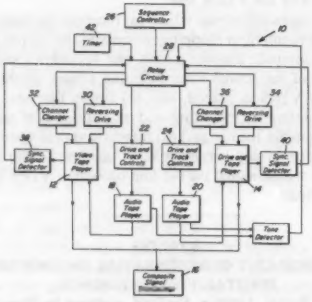
PROGRAM SCHEDULE DISPLAYING SYSTEM

Joseph A. Doumit, New Iberia, La., assignor to Dial-A-Channel, Inc., New Iberia, La.

Continuation-in-part of Ser. No. 499,019, Aug. 20, 1974, Pat. No. 3,956,579. This application May 6, 1976, Ser. No. 683,954

Int. Cl.² H04N 7/00

U.S. Cl. 358—83 **12 Claims**



1. For use in a television distribution zone wherein a television receiver may be selectively tuned to a plurality of channels over which television programs are transmitted, a system for displaying program schedules comprising a transmitter transmitting over one of said channels, a video record player device having a transport mechanism, optical record means associated with said player device for storing program schedule displays, means for transmitting composite video signals corresponding to said schedule displays to the transmitter from the player device, sequence control means connected to the transport mechanism for synchronized movement of the optical record means in opposite directions to cyclically transmit said composite video signals, and timer means connected to the sequence control means for periodically effecting a change in the composite video signals transmitted, whereby timely program schedule information transmitted over said one of the channels may be viewed on said television receiver.

4,199,782

STYLUS FOR REPRODUCING CAPACITIVE VIDEODISC

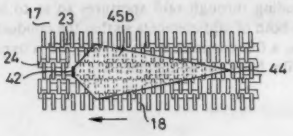
Yoshiyo Wada; Kunio Goto, and Hisao Kinjo, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 16, 1977, Ser. No. 852,366

Claims priority, application Japan, Nov. 17, 1976, 51-137216; Feb. 25, 1977, 52-20065; Mar. 28, 1977, 52-34106

Int. Cl.² H04N 5/80

U.S. Cl. 455—129 **6 Claims**



1. A reproducing stylus for tracing a track of a recording medium, in which track an information signal is recorded without grooves as variations of geometrical shape, and for reproducing as variations in capacitance the information signal thus recorded, said reproducing stylus comprising:

a reproducing stylus main structure having a tip portion with a flat sliding contact face for slidingly contacting a plurality of tracks of the recording medium at one time; and

an electrode on the reproducing stylus main structure to trace one track and reproduce the information signal as the variations in capacitance in accordance with the variations in geometrical shape,

shape reproducing stylus main structure having an electrode surface on which said electrode is disposed, said electrode surface having side edges and an end edge, said stylus reproducing structure having a pair of side surfaces diverging from the side edges of said electrode surface at least in the vicinity of the tip portion of the reproducing stylus main structure, said side surfaces having end edges,

said flat sliding contact face of the reproducing stylus main structure having a first edge line determined by said end edge of the electrode surface and having a dimension smaller than the width of the track, and a pair of second edge lines determined by said end edges of said pair of side surfaces, said second end lines diverging from both ends of said first edge line,

the maximum spacing between the second edge lines being greater than the width of the track.

4,199,783

OPTICAL SYSTEM FOR RECORDING AND READING AN INFORMATION ON A TAPE

Jean P. Huignard, and Jean-Claude Lehureau, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 25, 1978, Ser. No. 900,008

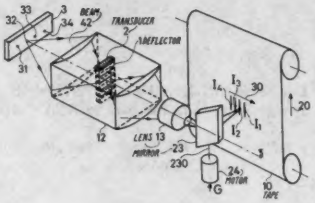
Claims priority, application France, Apr. 29, 1977, 77 12951

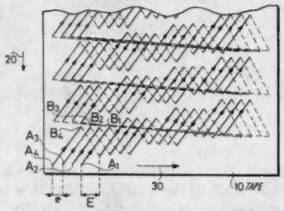
Int. Cl.² G02F 1/00, 1/11

U.S. Cl. 358—132 **14 Claims**

1. An optical recording and reading system for recording information signals on a light-sensitive tape and for subsequently reading the recorded information, said system comprising light emissive means for providing n beams of coherent light, projection means for focusing said beams on said tape into n equidistant spots aligned in a direction x, acousto-optical deflection means interposed between said emissive means and said projection means, producing a simultaneous recurrent displacement of said n spots in a direction perpendicular to x, a transport mechanism providing a translation movement of said tape in a direction u; the combination of said recurrent displacement and said translation movement giving a first scanning movement of said n spots relative to said tape along a succession of parallel track sections; said system further com-

prising modulator means intended for the recording of n information signals providing a two states intensity modulation of said n beams respectively in respect of said n information signals; said intensity modulation producing optically detect-





able modifications of a physical characteristic of said tape; said system further comprising photodetector means intended for the reading of said physical modifications, receiving the light emerging from said tape and providing n information signals in respect with said modifications.

4,199,784

METHOD AND APPARATUS FOR ELECTRO-OPTICALLY RECORDING PICTORIAL INFORMATION FOR A FACSIMILE TRANSMISSION SYSTEM

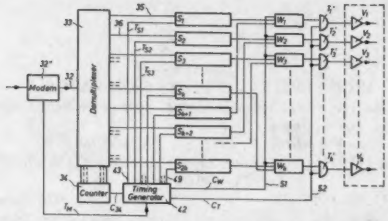
Klaus Wellendorf, Kitzeberg, and Ruediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 679,087, Apr. 21, 1976, abandoned. This application Jun. 3, 1977, Ser. No. 803,143

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1975, 2518370

Int. Cl.[2] **H04N** *1/24, 1/10, 1/40*

U.S. Cl. 358—296 **2 Claims**



1. A recording device for receiving and recording pictures which are transmitted by a transmitter in the form of serially transmitted picture signals derived by linearly scanning a picture pattern and in particular a facsimile recording device for recording said picture patterns with a multiple element recording head comprising multiple writing elements arranged in a column in a recording head for simultaneously recording a plurality of picture lines, comprising a demultiplexer receiving serially transmitted input picture signals, a counter controlling said demultiplexer, said counter counting up to the number of picture signals of one line until the end of line and repeatedly counting up to the number of received lines until the number of writing elements is reached to form a plurality of picture lines, a timing generator, first and second groups of shift register memories each group having the same number of shift registers as the number of writing elements in said multi-element writing head, each shift register memory connected to the demultiplexer and to said timing generator and each of said first group of shift registers adapted for serially receiving the input picture signals of single lines and the first group of shift register memories adapted for receiving successively the single lines of said picture which are to be first recorded and after said first group of shift registers are filled and adapted to read out the multiple picture lines read out therefrom in a parallel manner each of said second group of shift registers adapted for serially receiving the input picture signals of single lines during the period the picture signals are being read out of said first group of shift registers, and said second group of shift registers adapted to have read out multiple lines of picture lines in a parallel manner while said first group of shift registers are receiving the input signals, a plurality of switches being equal in number to the number of shift registers in said first group of shift registers, having first and second inputs and an output, each of said first inputs being connected to a shift register memory of said first group of said shift register memories and each of said second inputs being connected to a shift register memory of said second group of shift register memories for alternately connecting the memories of the first or second group of shift registers to the output of the switches during the parallel read-out of the memories of said first and second groups, a plurality of and-gates having first and second inputs and an output each output being connected to one writing element of the multiple element writing head, each first input being connected to the output of one of said switches and the second inputs being connected to said timing generator, a counter connected to said demultiplexer, said timing generator having a pulse frequency corresponding to the sequence of the picture signals and having a first output connected to said counter, said timing generator having a series of second outputs connected to first and second groups of shift memories for synchronizing the filling and read-out of said memories, said timing generator having a third output connected to said switches for alternately switching the first and second groups of shift register memories to the outputs of said switches and said timing generator having a fourth output connected to said and-gates for turning on during parallel read-out of said shift register memories.

4,199,785

ELECTRONIC ZOOM SYSTEM

John B. McCullough, Marlboro, and John Merchant, Needham, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 5, 1979, Ser. No. 1,049

Int. Cl.[2] **H04N** *5/22, 3/22, 5/33*

U.S. Cl. 358—180 **11 Claims**

1. Apparatus for use in an electronic zoom system comprising in combination:

first vidicon camera means having drive input means, output means and having a first field of view;

second vidicon camera means having drive input means, output means and having a second field of view which is less than the first field of view;

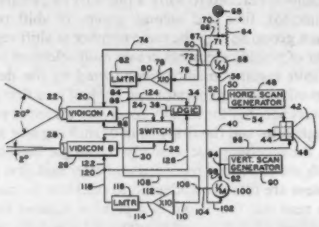
scan generating means operable to produce a scan signal;

signal generating means operable to produce a magnification signal of magnitude that changes with a desired magnification;

signal modifying means having a first input connected to said scan generating means to receive the scan signal, having a second input connected to said signal generating means to receive the magnification signal and operable to produce a

drive signal representative of the scan signal divided by the magnification signal;

first means connecting the drive input means of said first vidicon camera to said signal modifying means to receive the drive signal;



clipping means connected to said signal modifying means to receive the drive signal and to produce a further signal representative of the drive signal clipped by an amount which varies with the magnitude of the drive signal; and

second means connecting the drive input means of said second vidicon camera to said clipping means to receive the further signal.

4,199,786

VIDEO/INTERCARRIER SOUND DETECTING CIRCUIT IN TELEVISION RECEIVER

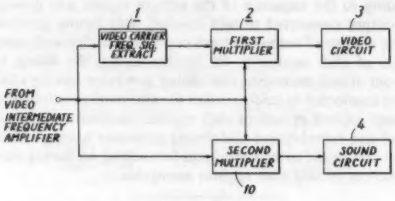
Toshio Orii, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 27, 1978, Ser. No. 890,394

Claims priority, application Japan, Mar. 26, 1977, 52/34810; Mar. 26, 1977, 52/34812

Int. Cl.[2] H04N 5/62

U.S. Cl. 358—197 **7 Claims**



1. A video/intercarrier sound detecting circuit in a television receiver, comprising:

video intermediate frequency amplifying means for amplifying a video intermediate frequency signal including a video carrier signal and a sound carrier signal having a predetermined frequency difference therebetween,

means operatively coupled to said video intermediate frequency amplifying means for extracting the video intermediate frequency carrier signal,

means responsive to said video intermediate frequency carrier signal and the video intermediate frequency signal from said video intermediate frequency amplifying means for synchronously detecting said video intermediate frequency signal with said video intermediate frequency carrier signal for providing a detected video signal, and

multiplier means operatively coupled to said video intermediate frequency amplifying means and having a first and second inputs each adapted to receive the video intermediate frequency signal from said video intermediate frequency amplifying means for evaluating the product of the first and second input signals applied to said first and second inputs for providing the product output including a difference component of said video carrier frequency and said sound carrier frequency as a sound intermediate frequency signal.

4,199,787

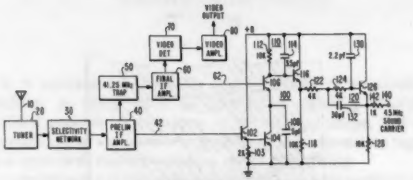
INTERCARRIER SOUND SYSTEM

Jack Craft, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 17, 1978, Ser. No. 961,508

Int. Cl.[2] H04N 5/62

U.S. Cl. 358—197 **10 Claims**



1. In a television receiver, a circuit for combining a sound carrier signal, which is frequency modulated with sound information, with a picture carrier signal, which is amplitude modulated by a video signal to develop an intercarrier sound signal comprising:

an amplifying device having a base electrode, an emitter electrode, and a collector electrode, and a rectifying junction intermediate said base and emitter electrodes;

an input signal path, including said base and emitter electrodes, for applying said modulated sound and picture carrier signals to said rectifying junction;

an output signal path, including said collector electrode and one of said base and emitter electrodes, for developing amplified signals including an intercarrier sound signal; and

means, common to said input and output signal paths, and including an impedance which varies inversely with frequency for causing the amplification provided by said amplifying device to vary directly with frequency over a band of frequencies inclusive of said video signal and said intercarrier sound signal.

4,199,788

VIDEO SPECIAL EFFECTS GENERATOR

Katsuhito Tsujimura, Machida, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,768

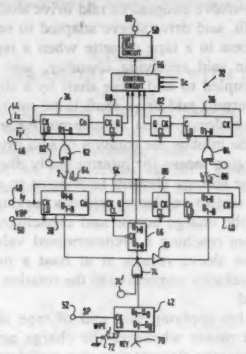
Claims priority, application Japan, May 24, 1977, 52/59306

Int. Cl.[2] H04N 5/22

U.S. Cl. 358—183 **26 Claims**

1. A video special effects generator having switcher means to which a plurality of video signals are supplied and generator means for generating control signals, said control signals combining portions of said video signals into a single picture by controlling said switcher means, said generator means comprising: a counter, loading means for loading a variable preset count into said counter, means for supplying N clock pulses to said counter within a period of predetermined duration, and

latch means set at a time determined by when an output of said counter indicates that said counter has attained a predetermined count value and reset at the end of said period for generating said control signals.

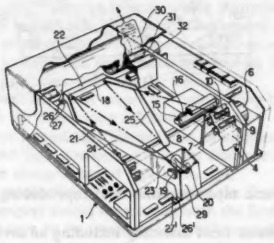


4,199,789

DOCUMENT ANALYZER IN PARTICULAR FOR A FACSIMILE TRANSMITTER

Marcel Yvard, Ollainville, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 21, 1978, Ser. No. 935,292
Claims priority, application France, Aug. 26, 1977, 77 26044
Int. Cl.[2] H04N *1/24*
U.S. Cl. 358—294 **5 Claims**



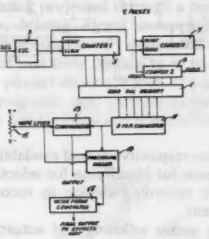
1. A document analyser in a facsimile transmitter, said analyzer having a housing including a front face and enclosing means for holding a document and transporting it step by step near to said front face of the housing means for illuminating the document to ensure that successive document analysis lines of the document are illuminated as the document is transported, a line sensor sensitive to the light from each complete successive document analysis line to generate an analysis signal from each analysis line, and optical means optically aligned with each other and with the sensor to direct and focus the light from each analysis line onto the sensor, the improvement wherein; said sensor and said optical means are rigidly mounted and optically pre-aligned on a common rigid support having a stirrup-iron shape, said support being fixed to the housing and extending substantially perpendicularly rearward from said front face and having an eye end of the stirrup near said front face of the housing with said sensor mounted thereon, and having the opposite end the tread of the stirrup with a mirror mounted thereon, and said mirror forming part of the optical means and serving to fold the light beam coming from said analysis line.

4,199,790

MATRIX WIPE GENERATOR FOR TELEVISION SIGNALS

Raymond L. Greenfield, and John G. Lauderdale, both of Dollard des Ormeaux, Canada, assignors to Central Dynamics Ltd., Pointe Claire, Canada

Filed Jun. 26, 1978, Ser. No. 919,233
Int. Cl.[2] H04N *5/22*
U.S. Cl. 358—22 **10 Claims**



1. A matrix wipe generator for controlling a matrix switching arrangement for television signals, said matrix switching arrangement including at least one switch with a control terminal, said wipe generator comprising:

storage means having a plurality of accessible storage locations, each location having a signal stored thereat;

means for accessing said storage locations one at a time whereby to provide, at an output terminal of said storage means, the signal stored at the accessed location;

comparator means having two input terminals and one output terminal;

wipe lever means having a movable lever and an output terminal, and being adapted to provide, at the output terminal thereof, a signal which varies, from a lowest level to a highest level, depending on the position of said movable lever;

the output terminal of said storage means being connected to one input terminal of said comparator means;

the output terminal of said wipe lever means being connected to the other input terminal of said comparator means;

waveform generator means having an input terminal and an output terminal;

said output terminal of said waveform generator being connected to said control terminal of said one switch whereby to control the operation of said matrix switching arrangement;

the output terminal of said comparator being connected to the input terminal of said waveform generator means;

the levels of said signals in said memory locations varying non-sequentially relative to the sequence of said memory locations, the levels of said signals in said memory locations being between the highest and lowest levels of said signals of said wipe lever means;

wherein, when a predetermined relationship exists as between the signal level at the one input terminal of said comparator and the signal level at the other input terminal of said comparator, said comparator will provide a signal to actuate said waveform generator means.

4,199,791

AUTOMATIC RECORDING SYSTEM

Lawrence G. Corey, Rockville, Conn., assignor to UMC Electronics Co., North Haven, Conn.

Filed Apr. 17, 1978, Ser. No. 897,276
Int. Cl.[2] G11B *15/18*
U.S. Cl. 360—69 **6 Claims**

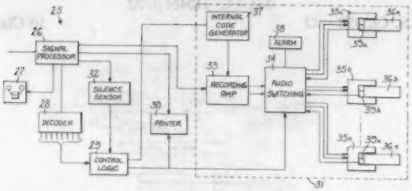
1. Apparatus adapted to receive and record a transmission

containing a plurality of serial message segments including audio segments and audio identification signals comprising,

a plurality of audio recording devices,

means for sensing the availability of the recording devices to record a message,

means for identifying an audio segment of the transmission,



actuating means responsive to said availability sensing means and said means for identifying for selecting and actuating an available recording device to record the identified audio segment,

said actuating means selecting and actuating a succeeding available recording device to record each audio message segment, and

means for sensing the end of an audio message.

4,199,792

TAPE END WARNING APPARATUS

Ken Satoh, and Tuneo Yanagida, both of Hachioji, Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

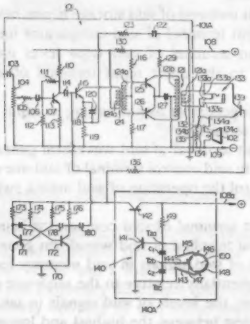
Division of Ser. No. 713,344, Aug. 11, 1976, Pat. No. 4,157,575.

This application Nov. 13, 1978, Ser. No. 959,572

Claims priority, application Japan, Aug. 19, 1975, 50-113951; Aug. 22, 1975, 50-115878; Aug. 22, 1975, 50-115879; Oct. 3, 1975, 50-135385; Feb. 12, 1975, 50-168208; Dec. 17, 1975, 50-170896

Int. Cl.[2] G11B *18/06, 23/30*

U.S. Cl. 360—74.1 **7 Claims**



1. A tape end warning apparatus for use in a tape recorder of the type which includes an audio amplifier, a loud speaker, a first switch for connecting an output of said amplifier to said loudspeaker when said tape recorder is in a playback mode and for disconnecting said output of said amplifier from said loudspeaker when said tape recorder is in a record mode, a tape cassette receiving chamber, a drive shaft extending into said receiving chamber and drive means for driving said drive shaft, said tape end warning apparatus comprising:

oscillator means for generating an audio electrical alarm signal when an end of tape signal is applied thereto;

a tape end detector circuit for detecting an end of tape condition and for applying said end of tape signal to said oscillator means responsive to the detection of an end of tape condition, said tape end detector circuit comprising:

(1) an RC charging circuit including a capacitive storage element, said RC charging circuit being supplied by a power source;

(2) a drive sleeve coupled to said drive shaft for rotation therewith, said drive sleeve adapted to engage a drive shaft recess in a tape cassette when a tape cassette is placed in said receiving chamber, said drive sleeve being coupled to said drive shaft by a slip mechanism which permits said drive shaft to be rotated relative to said drive sleeve when an external force of sufficient magnitude inhibits the rotation of said drive sleeve;

(3) discharging means for intermittently discharging said capacitive storage element responsive to rotary movement of said drive sleeve, said discharging means preventing the charge across said capacitive storage element from reaching a predetermined value whenever said drive sleeve rotates at at least a predetermined angular velocity responsive to the rotation of said drive shaft; and

(4) means for applying said end of tape signal to said oscillator means whenever the charge across said capacitive storage element rises above said predetermined value.

4,199,793

DIGITAL RECORDING

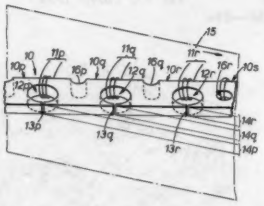
John L. E. Baldwin, Croydon, England, assignor to Independent Broadcasting Authority, London, England

Filed Mar. 22, 1978, Ser. No. 888,863

Claims priority, application United Kingdom, Mar. 24, 1977, 12391/77

Int. Cl.[2] G11B *5/09, 19/24, 15/60*

U.S. Cl. 360—78 **7 Claims**



1. A magnetic tape recording and reproducing apparatus, comprising

(a) a transducer head assembly including an array of transducer heads;

(b) a loop of magnetic tape;

(c) drive means for transporting said magnetic tape past said head assembly in a first direction, said transducer head assembly being mounted for movement in a second direction generally transverse to said first direction;

(d) guide means for guiding the magnetic tape past said head assembly, said guide means being disposed relative to the array of heads to guide the tape at an acute angle past the heads and to cause said transducer heads to simultaneously engage respective portions of the magnetic tape that are spaced apart in said first direction of movement of the tape and that are spaced apart in said second direction transverse to said first direction of movement, whereby a separate track is traced by each head simultaneously on the tape and each track is substantially parallel to the edges of the tape for at least a portion of the length of the track;

(e) means for causing non-rotational relative movement between said head assembly and said tape in said second direction;

(f) means for supplying data to be recorded to said array of transducer heads; and

(g) means for supplying a tracking control signal to one of said transducer heads for recording a tracking control signal on a track that is arranged between a pair of tracks.

4,199,794

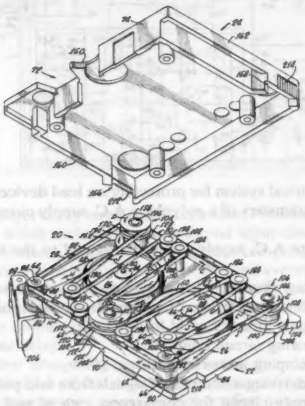
DUAL TAPE TRANSPORT SYSTEM WITH TENSIONING MEANS

Robert F. Pfost, Los Altos; William E. Seaman, Woodside, and Chester W. Newell, San Jose, all of Calif., assignors to Newell Research Corporation, Saratoga, Calif.

Division of Ser. No. 758,816, Jan. 12, 1977, Pat. No. 4,135,058. This application Nov. 9, 1978, Ser. No. 958,958

Int. Cl.[2] G11B *15/26, 15/43*

U.S. Cl. 360—92 12 Claims



1. Record-tape transport system, which comprises:

(a) first and second tape hubs, and a first record-tape having one end portion wound onto the first hub, an opposite end portion wound onto the second hub and an intermediate portion extending between the hubs;

(b) a first tape transport means for transporting the first tape between the hubs along a first tape path;

(c) a second record-tape formed into an endless loop;

(d) a second tape transport means for transporting the second tape along a second tape path; and,

(e) means mechanically interconnecting the first and second tape transport means for causing both the first and second tapes always to be transported simultaneously along the first and second tape paths, in opposite record/playback directions, whereby when one of the tapes is driven in a forward record/playback direction, the other one of the tapes is driven in a reverse record/playback direction.

4,199,795

CARTRIDGE RECEIVING AND LOCKING MECHANISM

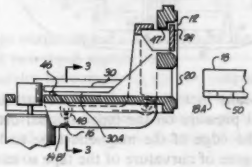
Alexander Hunter, Chalfont, Pa., assignor to Transaction Management, Inc., Montgomeryville, Pa.

Filed Jun. 29, 1978, Ser. No. 918,950

Int. Cl.[2] G11B *15/00*

U.S. Cl. 360—93 1 Claim

1. A magnetic tape cartridge receiving and locking mechanism comprising but three relatively movable components, further comprising a table portion adapted to receive a magnetic tape cartridge, a front portion oriented relatively perpendicular with respect to said table portion, said front portion having an opening therein extending above the level of the table adapted to receive said magnetic tape cartridge, and means for locking said magnetic tape cartridge against relative movement after said magnetic cartridge has been inserted into said opening, said locking means comprising a rocker arm pivotally mounted for movement relative to said table and front portions, said rocker arm comprising generally the configuration of a bent U shaped member, said bend occurring approximately midway on each arm of said U shaped member proximate to pivot points for effecting said pivotal movement of said rocker arm relative to said table and front portions, said rocker arm further comprising a projection from the base of said U which projection functions as a push button, said push button cooperatively positioned so as to extend through a second opening in said front portion, stop means attached to the end of at least one arm of said U shaped member, said stop means capable of being projected through a cut-out portion in said table portion, biasing means comprising a relatively straight spring member operatively connected with respect to said rocker arm and said table portion so as to cause said stop means to normally project above the level of said table portion, whereby when a magnetic tape cartridge is inserted through the opening in said front portion and is projected therethrough



so as to move onto and across said table portion the leading edge of said magnetic cartridge moves against said stop means of said rocker arm overcoming said spring member and causing said stop means to be depressed below the surface of said table portion and thereby permitting the magnetic tape cartridge to be further inserted into said cartridge receiving mechanism until cooperating openings on the underside of said magnetic tape cartridge become aligned with said stop means of said rocker arm at which time the biasing effect of said spring member causes said stop means attached to said end of at least one arm of said U shaped member to project into at least one of said cooperating openings on the underside of said magnetic cartridge tending to restrain further movement of said magnetic cartridge on said table until such time as said push button is depressed thereby retracting said stop means below the level of said table portion so as to permit the magnetic tape cartridge to be readily removed.

4,199,796

TAPE GUIDE ARRANGEMENT FOR A TRANSVERSELY SCANNING MAGNETIC RECORDER

Bernard P. Videc, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,616

Claims priority, application Netherlands, Apr. 27, 1977, 7704581

Int. Cl.[2] G11B *15/60*

U.S. Cl. 360—130.22 8 Claims

1. A tape guide arrangement for a transversely scanning magnetic tape recorder comprising:

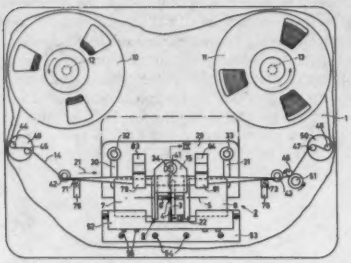
rotary magnetic head means for scanning a coated side of a tape in the recorder, including at least one head rotated about an axis parallel to a longitudinal direction of tape travel,

concavely curved tape guide means for guiding the tape in a locally transversely curved shape past the head means, said guide means having one concave guide portion disposed upstream from the head means and another concave guide portion disposed downstream from the head means,

at least first and second cylindrical tape guides for guiding the tape in a transversely straight shape, said first cylindrical guide being disposed upstream and spaced a given distance from said one guide portion, said second cylindrical guide being disposed downstream from the other guide

portion, the shape of the magnetic tape cross-section during its movement from said upstream cylindrical guide to said downstream cylindrical guide changing from straight to curved and subsequently again from curved to straight, and

additional means for curving the tape disposed between said first cylindrical guide and said one guide portion, said



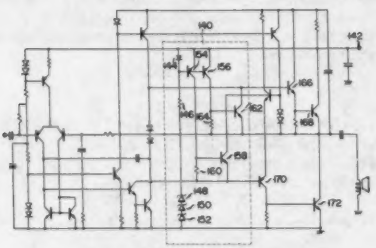
additional means including at least one member which exerts a local pressure on the tape at equal distances inward from the edge of the magnetic tape to locally increase the degree of curvature of the tape so as to reduce differences in local membrane stress in the cross-section of the magnetic tape at the location of the scanning paths of the magnetic head means.

4,199,797

PROTECTIVE CIRCUIT FOR AMPLIFIER CIRCUITS

Jiro Kusumi, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Dec. 30, 1977, Ser. No. 865,868
Claims priority, application Japan, Jan. 14, 1977, 52-2491[U]
Int. Cl.[2] H02H 3/22
U.S. Cl. 361—56 **3 Claims**



1. A protective circuit for protecting an amplifier circuit including at least one transistor having a base supplied with the output signal of the protective circuit comprising:

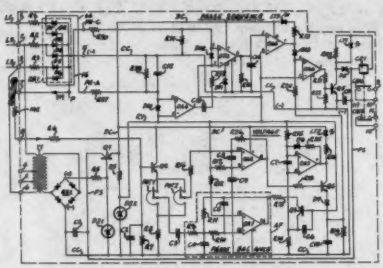
a plurality of transistors for controlling the at least one transistor; and a bias circuit including at least one resistive means and at least one Zener diode, which are connected in series between a power source terminal and ground, said bias circuit setting up a proper bias for said plurality of transistors; said at least one resistive means being connected to ground across the base-emitter of at least one of said plurality of said transistors; wherein said Zener diode is so connected as to be conductive when the power source voltage exceeds a predetermined value, and conduction of said Zener diode produces a voltage drop across said resistive means and the voltage drop makes said at least one transistor nonconductive.

4,199,798

PHASE BALANCE MONITORING SYSTEM INCORPORATING VOLTAGE AND PHASE SEQUENCE MONITORING

Elton D. Leppke, Grafton, and Russell P. Schuchmann, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 13, 1978, Ser. No. 886,299
Int. Cl.[2] H02H 3/26
U.S. Cl. 361—76 **21 Claims**



1. An electrical system for protecting a a load device against change in parameters of a polyphase A.C. supply circuit comprising:

a polyphase A.C. supply circuit connected to the load device;

a monitoring circuit comprising an output circuit normally controlling application of power from said polyphase A.C. supply circuit to said load device;

said monitoring circuit comprising:

signal developing means comprising:

means for deriving a first pair of signals from said polyphase A.C. supply circuit for comparison, one of said signals being indicative of a parameter of said polyphase A.C. supply circuit to be monitored and being variable with variation in said parameter, and the other signal being a reference signal uniform in character;

a signal comparator and output control means responsive to said signals when said variable signal has a value relative to said uniform signal indicative of a normal condition of said parameter for controlling said output circuit to maintain power on said load device;

said signal comparator and said output control means being responsive to said signals when said variable signal reaches a value relative to said uniform signal indicative of a significant variation in said parameter that might be hazardous to said load device for tripping said output circuit to interrupt power from said load device;

means for developing a second pair of signals from said polyphase A.C. supply circuit indicative of two phases thereof;

means for converting one of said phase signals to a gating signal having a coincident or non-coincident relation to the other phase signal according to whether the phases of said polyphase A.C. supply circuit have correct or incorrect phase sequence;

means comprising gating means responsive to said gating signal being coincident with said other phase signal for providing a control signal and means responsive to said control signal for controlling said output circuit to maintain power on said load device provided said signal comparator and said output control means have not tripped the same;

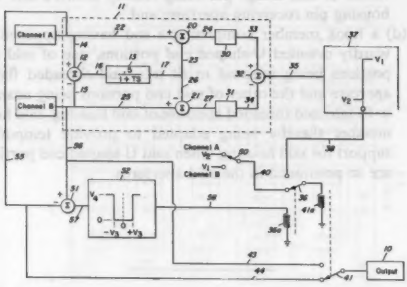
and said means comprising gating means being responsive to said gating signal being non-coincident with said other phase signal for tripping said output circuit to interrupt power from said load device regardless of any concurrent maintaining action of said signal comparator and output control means.

4,199,799

SUPERVISORY CIRCUIT FOR REDUNDANT CHANNEL CONTROL SYSTEMS

Allen L. Ostenso, and Charles B. Johnson, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 24, 1978, Ser. No. 889,625
Int. Cl.[2] H02H 3/26
U.S. Cl. 361—78 8 Claims



1. A supervisory circuit for a redundant two-channel control system which includes first and second input channels and an output channel, said supervisory circuit comprising:

(a) first means for forming a time delayed average connected to receive an input from each of said first and second channels and providing an output equal to the average of the outputs of said input channels with a predetermined time delay;

(b) first comparing means connected to receive an input from each of said channels and from said first means, said first comparing means providing a first output equal to the output of said first channel minus the output of said first means and a second output equal to the output of said second channel minus the output of said first means;

(c) second comparing means connected to receive the first and second outputs of said first comparing means, said second comparing means providing an output representative of the difference between the absolute values of the first and second outputs of said first comparing means, the polarity of said output indicating which channel is faulted; and

(d) trigger means connected to receive the output of said second comparing means and providing an output dependent upon the polarity of the output from said second comparing means;

(e) first switching means connected to receive the output of said trigger means, and inputs from said first and second input channels, said first switching means being responsive to the output of said trigger means for selectively connecting either said first or said second input channel to said output channel.

4,199,800

BRUSHLESS DC TACHOMETER

James G. Weit, Pittsburgh, Pa., assignor to Contraves Goerz Corporation, Pittsburgh, Pa.

Filed May 1, 1978, Ser. No. 901,419
Int. Cl.[2] G01P 3/54
U.S. Cl. 361—239 8 Claims

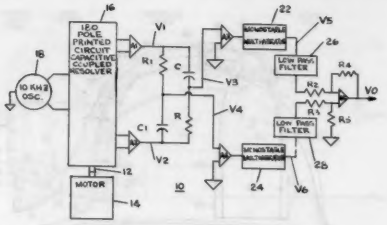
1. A brushless tachometer for providing a DC output voltage indicative of the speed of a rotatable shaft comprising:

a multi-pole brushless resolver connected to the shaft to be instrumented for providing modulated sine and cosine position indications;

an oscillator providing a modulating input signal to said resolver;

a side band splitting circuit connected to receive the modulated sine and cosine position indications and providing two output signals whose frequencies difference is representative of shaft speed;

frequency to voltage converting means connected to receive the two output signals from said side band splitter circuit and providing two output voltage signals wherein each



voltage output signal is a function of the frequency of one of the two input signals; and,

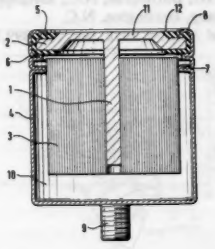
a comparator for comparing the two output signals from said frequency to voltage converting means and providing a different signal whose magnitude is indicative of shaft speed and whose sign is indicative of the direction of shaft rotation.

4,199,801

COIL CAPACITOR

Franz-Josef Wolf, Sprudelallee 19, 6483 Bad Soden-Salmunster, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 797,552, May 16, 1977. This application Apr. 20, 1978, Ser. No. 898,085
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717540; Apr. 23, 1977, 2718228
Int. Cl.[2] H01G 1/02
U.S. Cl. 361—272 6 Claims



1. A capacitor comprising:

(a) a cup-like metal housing having a rolled in upper edge and a support corrugation in the wall thereof;

(b) a metal closure lid for said housing formed as a unitary one piece structure with a metal core serving as a winding mandrel;

(c) a capacitive element of the type employing spirally wound up electrode foils, the innermost of said electrode foils being wound in electrical contact with said metal core, and the outermost of said electrode foils being in electrical contact with said housing;

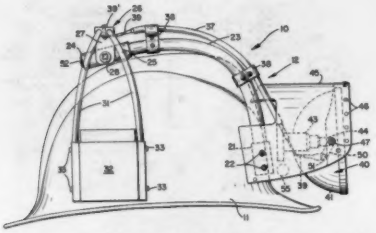
(d) an electrically insulating resilient seal covering the peripheral edge part of said lid on its topside, underside, and radially outer face, and providing a gas and liquid tight sealing interface between said lid and said rolled in upper edge if said housing while resting with its undersurface on said support corrugation.

4,199,802

HEADGEAR WITH LIGHT

Douglas E. Malm, 2031 W. Palmyra, Apt. C, Orange, Calif. 92668

Filed Jan. 27, 1978, Ser. No. 872,931
Int. Cl.[2] F21L *15/14*
U.S. Cl. 362—106 7 Claims



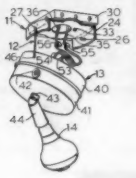
1. A headgear with an electric light source comprising a helmet, a substantially rigid frame secured to the front of the helmet and extending forwardly therefrom, means mounting said light source for up and down swinging movement in the frame, rigid connecting means secured to and extending from the frame, a pendulum having an intermediate top portion pivotally supported by said connecting means above the helmet and rearwardly of the frame and including weighted bottom portions straddling bottom parts of the helmet, and a cable control means connecting said top portion of the pendulum to the light source whereby an up and down tilting movement of the front part of the helmet will impart oscillating movement to the pendulum and from the pendulum to the light source, relative to the frame, and in the same direction.

4,199,803

MERCURY VAPOR FLOODLIGHT FIXTURE ASSEMBLY AND METHOD

Rector S. Hunt, III, Burlington, N.C., assignor to Handy Man Electric Company, Burlington, N.C.

Filed Apr. 24, 1978, Ser. No. 899,243
Int. Cl.[2] F21K *7/00*
U.S. Cl. 362—263 2 Claims



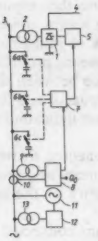
1. A mercury vapor floodlight fixture assembly comprising:
(a) an adapter bracket, said adapter bracket adapted to be secured to a conventional outlet box having electrical supply wires terminating therein, said bracket having a normally horizontally positioned flat base plate with a pair of normally vertically positioned downwardly extending opposed flange members appended thereto, one of said flange members having an aperture for receiving a threaded screw member therein and the other flange member having on the inner surface thereof a pin extending inwardly therefrom parallel to the plane of said base plate;
(b) a housing, said housing being adapted to fit between said flange members and to be secured on said bracket base plate, said housing having a pair of fitted top and bottom pan portions adapted for enclosing and mounting ballast photoelectric cell means associated with said fixture, said housing having a normally vertically positioned wall portion fitted with opposed pin receiving and threaded screw receiving apertures adapted to mate with said flange aperture and pin;
(c) a threaded screw member adapted to screw through said flange member having said aperture into said housing threaded aperture to support one side of said housing with the opposite side thereof being adapted for support by means of said flange pin being loosely inserted into said housing pin receiving aperture; and
(d) a hook member comprising a rod having opposed inwardly oriented U-shaped end portions, one of said end portions being adapted to fit into said threaded flange aperture and the other of said end portions being adapted to fit into said threaded aperture of said housing, said hook member thereby being adapted to provide temporary support for said housing when said U-shaped end portions are so positioned in the said apertures.

4,199,804

METHOD AND APPARATUS FOR CONTROLLING THE ALTERNATING VOLTAGE OF A STATIC CONVERTOR

Lars-Erik Juhlin, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Mar. 20, 1978, Ser. No. 888,587
Claims priority, application Sweden, Mar. 28, 1977, 7703490
Int. Cl.[2] H02M *1/18*
U.S. Cl. 363—51 12 Claims

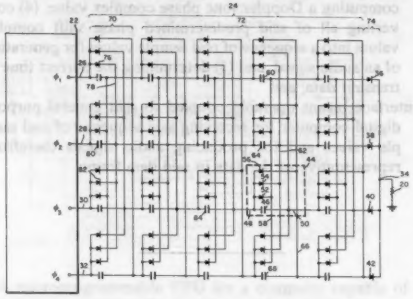


1. An improved reactive power control apparatus of a type wherein an AC network and a DC network are connected to a static convertor and the changes in reactive power of said AC network are compensated by switching operations including switching corresponding reactance elements into and out of connection with said AC network, and by generating a normal angle to control the operation of said static convertor, said improved control comprising:
a reactance switching control and voltage compensation means for varying said normal control angle to another value to compensate for transient voltages induced by a switching operation and for returning said normal control angle to its original value, wherein said reactance switching control and voltage compensation means includes voltage control means for rapidly generating a maximum increment of said normal control angle at a switching operation and for gradually reducing said increment to zero after said switching operation to compensate for the rapid incremental change of said normal control angle.

4,199,805
MULTIPHASE CAPACITOR DIODE VOLTAGE MULTIPLIER

Robert M. Martinelli, Torrance, and Allan F. Ahrens, Saugus, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 21, 1977, Ser. No. 853,169
Int. Cl.² H02M 7/00
U.S. Cl. 363—60 **13 Claims**



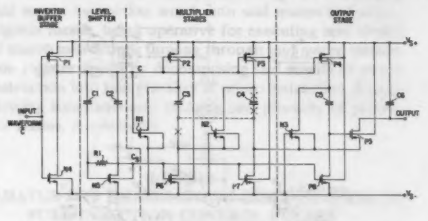
1. A multiphase voltage multiplier which comprises:
(a) means for producing an output comprising at least three voltages, each of said voltages alternating between a high level and a low level and differing in phase;
(b) a capacitor-diode multiplier circuit having at least three input channels and an output junction;
(c) said multiplier circuit comprising N circuit strings, each of said strings being in electrical connection with an input channel and the output junction;
(d) each of said input channels of said circuit being in electrical connection with said means;
(e) each of said strings of said multiplier circuit comprising M stages;
(f) each of said stages having an input and an output, one of said strings being string j and one of said stages being stage i, the output of stage i of circuit string j being in electrical connection with the input of stage (i+1) of circuit string j;
(g) an output diode connecting the output of the final stage of each string to the output junction of the multiphase voltage multiplier; and
(h) each stage i of each circuit string j comprising (1) a capacitor connected across said input and said output of said stage i of said string j, (2) a diode connected from said input of said stage i of said string j to the input of stage (i+1) of string (j+1) and (3) a diode connected from the input of said stage i of string N to the input to stage (i+1) of string 1.

4,199,806
CMOS VOLTAGE MULTIPLIER

Raymond B. Patterson, III, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 18, 1978, Ser. No. 870,549
Int. Cl.² H02M 7/00
U.S. Cl. 363—60 **9 Claims**

1. A voltage multiplier circuit for producing an output which is a multiple of a supply voltage supplied thereto, comprising a first CMOS multiplier cell, said CMOS cell being comprised of:
a pair of MOS devices of a first conductivity type;
a single MOS device of a second conductivity type;
and a capacitance means for storing voltage;
the source-drain conduction paths of said pair of MOS devices of the first conductivity type being serially connected with said capacitance means and said supply voltage such that said capacitance means lies between the source-drain conduction paths of said pair of MOS devices;
the source-drain conduction path of said single MOS device of the second conductivity type being connected between a first terminal of said capacitance means and said supply

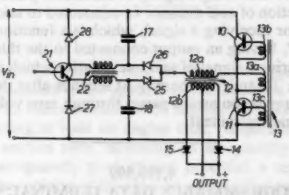


voltage, such that when the conduction paths of said pair of MOS devices of the first conductivity type are conductive, the capacitance means is connected in parallel with said supply voltage and when said conduction path of said single MOS device of the second conductivity type is conductive said capacitance means is serially connected to said supply voltage.

4,199,807
REGULATED POWER SUPPLY APPARATUS

John E. Crowe; John M. Leach, both of Bishop's Stortford, and Malcolm A. Burchall, Wendens Ambo, all of England, assignors to Gould Advance Limited, Mainault, England

Filed Apr. 24, 1978, Ser. No. 899,354
Int. Cl.² H02P 13/20
U.S. Cl. 363—132 **10 Claims**

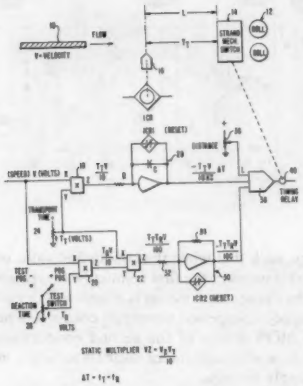


1. In a power supply apparatus including a power source, means connected with the power source for producing an oscillatory signal, and inductive coupling means having an input connected with the oscillatory signal producing means, and an output for producing an alternating-current output signal, the improvement which comprises switching regulating means connected in series with the oscillatory signal producing means and the input of the inductive coupling means for producing a controllable voltage drop, said switching regulating means including
(a) a switching device (21; 55, 56; 62); and
(b) control means connected with said switching device for controlling the ratio of conducting to non-conducting periods of said switching device, said control means including means responsive to the output signal to control the voltage drop in response to a variation in a parameter of the output signal.

4,199,808
INVERSE TIMER WITH NON-INTERACTING POTENTIOMETER SETTINGS

Robert S. Peterson, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 27, 1977, Ser. No. 864,891
Int. Cl.[2] G05B 6/02; G06G 7/48
U.S. Cl. 364—117 6 Claims



1. An inverse timer for a process line wherein material moving at a velocity V, is detected at a distance L from an instrument which is to be actuated, having a reaction time T_R seconds, the time for the material to cover the distance L being T_T seconds, wherein $\Delta t = t_T - t_R$, comprising:

summation means having first, second and third inputs and an output connected to said instrument to be actuated;

integrating means for receiving a signal which is a function of T_T and V, and for delivering an output signal of one polarity to said second input which is a function of T_T, V and Δt;

means, at distance L from said instrument, for detecting the forward end of the material, connected to said integrating means to initiate integration upon detection;

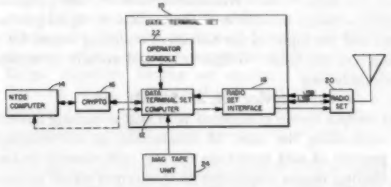
means for delivering a signal, of a different polarity which is a function of said distance L, connected to said first input;

means for receiving a signal, which is a function of T_T, T_R and V, having an output connected to the third input for delivering a signal of said one polarity which is a function of T_T, T_R and V, whereby Δt seconds after detection the said summation means passes through zero volts and actuates said instrument.

4,199,809
PROGRAMMABLE DATA TERMINAL SET

Edward J. Pasahow, and Carlos Nuese, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 5, 1976, Ser. No. 674,025
Int. Cl.[2] G06F 15/16; H04L 27/02
U.S. Cl. 364—200 18 Claims



1. A system for generating audio signals representative of the digital data output from a digital computer data source to be transmitted in a computer-to-computer radio data link comprising:

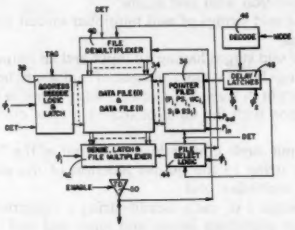
a general purpose digital computer being programmed for (1) receiving a plurality of data frames from a digital computer data source, each said frame including a predetermined number of data bits, (2) adding a predetermined number of Hamming code parity check bits for each said data frame, (3) converting each bit-pair of each said data frame into a predetermined phase shift complex value and computing a Doppler tone phase complex value, (4) converting all of said predetermined phase shift complex values into a sequence of real sample values for generation of an audio signal, and (5) determining the correct time to transmit data; and

interface means operably coupled to said general purpose digital computer for receiving said sequence of real sample values and for producing audio signals therefrom representative of the data in said data frame.

4,199,810
RADIATION HARDENED REGISTER FILE

Thomas L. Gunckel, II, Santa Ana, and John S. Irvine, Fountain Valley, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 7, 1977, Ser. No. 757,807
Int. Cl.[2] G06F 13/00
U.S. Cl. 364—200 21 Claims

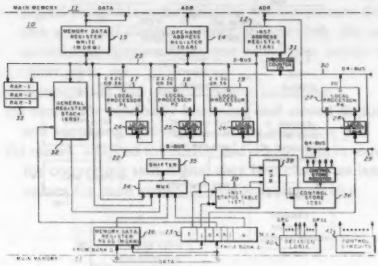


15. In a central processing unit for use in a general purpose digital computer, the combination comprising a plurality of radiation hard memory storage elements, said storage elements being allocated to provide at least one dual set of data storage elements for alternately storing a data word in one of the two sets of such storage elements, one set of said dual set of data storage elements having a valid data word stored therein, an additional storage element corresponding to said dual set of data word storage elements for use as a pointer indicating which set of data storage elements is a current source of a valid data word, an additional set of dual storage elements corresponding to said dual set of data storage elements for storing save signals representing the truth state of a signal stored in said pointer, still another storage element for storing a master pointer signal, the truth state of which indicates which pointer save signal storage element represents the pointer signal truth state to be used to select the proper set of data storage elements for generating a valid data word, and means for charging the truth state of the signals stored respectively in said pointer storage element and in said master pointer storage element each time a data word is stored in a set of data storage elements.

4,199,811
MICROPROGRAMMABLE COMPUTER UTILIZING CONCURRENTLY OPERATING PROCESSORS

Barry R. Borgerson, Gwynedd Valley; Garold S. Tjaden, Doylestown, both of Pa., and Merlin L. Hanson, Arden Hills, Mich., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 2, 1977, Ser. No. 830,303
Int. Cl.[2] G06F *9/18, 9/16, 13/00*
U.S. Cl. 364—200 65 Claims



1. A microprogrammable CPU for a computer capable of performing a repertoire of macro instructions, said computer including main memory mains for storing macro instruction words corresponding to macro instructions to be performed by said computer, each macro instruction being executable by a plurality of micro operations, comprising

main memory addressing means for addressing said main memory means to fetch macro instruction words therefrom for execution by said computer,

macro instruction register means for receiving macro instruction words fetched from said main memory means by said main memory addressing means,

control storage addressing means coupled to said macro instruction register means for providing micro routine addressing signals in accordance with the contents of the macro instruction word fetched into said macro instruction register means,

control storage means for storing a plurality of micro routines for performing said macro instructions of said repertoire, respectively, each said micro routine comprising micro instruction words capable of controlling a plurality of said micro operations,

said control storage means being responsive to said micro routine addressing signals for addressing the micro routine corresponding to said macro instruction word fetched into said macro instruction register means and for simultaneously providing a plurality of said micro instruction words of said micro routine addressed by said micro routine addressing signals, and

a plurality of processor means coupled to said control storage means, each said processor means including arithmetic and logic unit means and local memory means intercoupled in said processor means for performing said plurality of micro operations, said plurality of processor means being responsive, respectively, to said plurality of micro instruction words simultaneously provided by said control storage means in response to said micro routine addressing signals for controlling said plurality of processor means to simultaneously perform a respective plurality of said micro operations in response to the contents of said respective micro instruction words simultaneously applied thereto in execution of said macro instruction word fetched into said macro instruction register means,

said macro instruction words fetched into said macro instruction register means from said main memory means comprising, in operation of said computer, a stream of macro instructions flowing through said macro instruction register means,

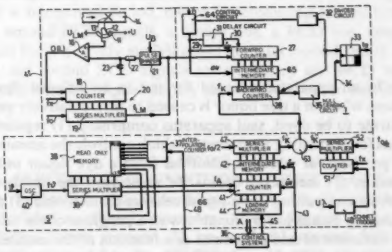
said plurality of micro instruction words applied simultaneously from said control storage means to said plurality of processor means, respectively, comprising a plurality of micro instruction streams flowing simultaneously through said plurality of processor means, respectively,

said main memory means, main memory addressing means, macro instruction register means, control storage means and plurality of processor means in combination, in response to said main memory addressing means fetching said macro instruction words into said macro instruction register means, being operative for executing said stream of macro instructions flowing through said macro instruction register means by decomposing said stream of macro instruction into said plurality of micro instruction streams flowing simultaneously through said plurality of processor means, respectively.

4,199,812
APPARATUS FOR DETERMINING THE DURATION OF FUEL INJECTION CONTROL PULSES

Winfried Klötzner, Schwieberdingen; Rolf Däumer, Merklingen; Martin Zechnall, Schwieberdingen; Uwe Kiencke, Möglingen, and Ulrich Flaig, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 742,711, Nov. 17, 1976, abandoned.
This application Jun. 29, 1978, Ser. No. 920,578
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1975, 2551639
Int. Cl.[2] F02D *5/00;* G06F *15/50*
U.S. Cl. 364—431 13 Claims



1. In an apparatus for determining the duration of the injection-control commands to be applied to the injection valves associated with an internal combustion engine, the duration of injection depending at least on engine rpm, temperature and airflow in the suction tube, including an air-quantity meter generating an air-quantity proportional potential, a temperature sensor in the vicinity of the internal combustion engine, a tachometer, and a computer circuit computing the duration of the injection pulses from the data provided, the improvement comprising:

a first counter fed by a counting frequency which is proportional to the amount of air taken in by the engine within a predetermined angle of rotation of the crankshaft.

an analog-to-frequency converter connected to the air-quantity meter and to the first counter for processing the output potential of said air-quantity meter,

means for converting engine temperature into a proportional frequency,

a multiplier circuit connected with the last-named means,

an addressable read-only memory connected with the multiplier circuit, the stored data values in said memory being issued as a function of further operational parameters and being multiplicable by said temperature-proportional frequency in said multiplier circuit,

means for generating at least one other frequency derived from at least one other operational parameter;

means for receiving and summing the output frequency of the multiplier circuit and said at least one other frequency in order to generate a total correction frequency, and

a second counter which takes over the contents of said first counter for count-out at said total correction frequency; whereby the duration from the time of transfer to the time of a predetermined counter content may be used as a measure for the duration of the fuel injection time per piston stroke.

4,199,813

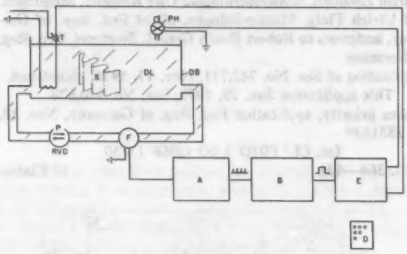
APPARATUS USEFUL IN EXHAUST DYEING

Jose Carbonell, Bottmingen; Rolf Hasler, Therwil, both of Switzerland, and Roland Walliser, Rixheim, France, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 423,311, Dec. 10, 1973, Pat. No. 4,089,644. This application May 11, 1978, Ser. No. 904,997

Int. Cl.[2] G05B *21/00*

U.S. Cl. 364—469 **8 Claims**



1. In an apparatus adapted for use in an exhaust dyeing process wherein a dye liquor is caused to flow relatively past a substrate to be dyed, said apparatus comprising (1) regulating means for regulating a parameter which controls the amount of dye per interval which is adsorbed from a dye liquor onto a substrate, (2) measuring means for measuring the number of intervals and putting out a signal relative thereto, and (3) data processing means programmable with a program of the necessary variation of said parameter as a function of the number of said intervals to obtain a desired amount of dye adsorption per interval, said data processing means having input means for receiving said signal from said measuring means and output means to said regulating means, the improvement wherein said measuring means comprises means for measuring the number of cycles of dye liquor relative to the substrate.

4,199,814

COMPUTER NUMERICAL CONTROL MACHINE TOOL

Edward J. Rapp, Cleveland Heights, and Glen A. Johnson, Cleveland, both of Ohio, assignors to Digitcom, Inc., Mentor, Ohio

Filed Oct. 12, 1977, Ser. No. 841,597

Int. Cl.[2] G06F *15/46*; G05B *19/18*

U.S. Cl. 364—474 **8 Claims**

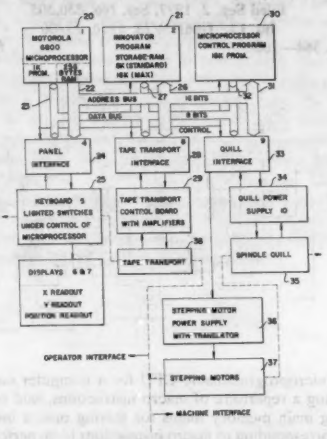
1. In a computer numerical control for point-to-point positioning and programming of a machine tool on at least two axes, said control being physically adjacent and electrically connected to the machine tool and having programming and control functions for said machine tool, said control comprising:

(a) an input terminal having a keyboard with alpha-numeric input plus functional control keys;

(b) disply means for showing the position of the machine tool at any time in X and Y coordinates, and having a display means which may be selectively used to output position number, tool number, and feed rate information;

(c) a microprocessor having an arithmetic logic unit, a CPU, RAM and ROM store and data and address handling means;

(d) a cassette tape input means with control logic therefor to input a computer program into store and to tape a program in store; and



(e) control means including functional keys for causing the stored program to direct and control the machine tool together with other control means for inputting into store, machine language instructions directly on the terminal, thereby modifying a stored program or building one.

4,199,815

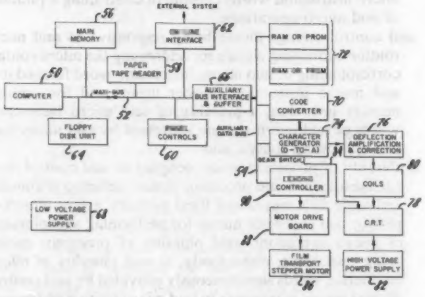
TYPESETTER CHARACTER GENERATING APPARATUS

Derek J. Kyte, Amerscham, England; Walter I. Hansen, Cold Spring Harbor, N.Y., and Roderick I. Craig, Cheltenham, England, assignors to Electra Corporation, Toledo, Ohio

Filed May 12, 1978, Ser. No. 905,451

Int. Cl.[2] G06F *3/14*; B41B *19/00*

U.S. Cl. 364—523 **30 Claims**



1. A typesetter for the automatic generation of characters comprising a character imaging system for writing graphics quality characters of any design on a print medium; a font storage system having digital data stored thereon defining each character to be imaged; and an electronic computation and control system, connecting said font storage system with said character imaging system, for controlling said character imaging system in accordance with said digital data;

said character imaging system including a flying spot scanning device for writing characters by means of a plurality of parallel scanning strokes;

said font storage system including a storage medium on which are recorded said digital data having:

(a) digital numbers defining the first and second coordinates of the start points of at least two outlines of a character that is superimposed on a normalized encoding set of first and second coordinates; and

(b) digital numbers defining a plurality of straight line vectors extending successively along the character outlines from said start points, each vector having a first digital number representing the first coordinate distance and a second digital number representing the second coordinate distance from one end of the vector to the other; and

said computation and control system including:

(a) means for randomly accessing said stored digital data and supplying said digital data in sequence; and

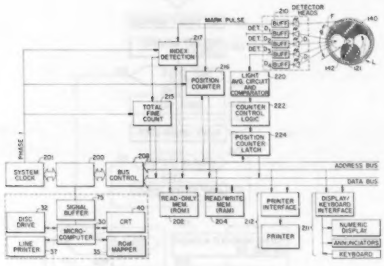
(b) means, adapted to receive said digital data in sequence, for converting said digital data into character intercept values for each stroke of said scanning device.

4,199,816

OPTICAL CALIBRATION APPARATUS AND PROCEDURE

William E. Humphrey, San Leandro, Calif., assignor to Humphrey Instruments, Inc., San Leandro, Calif.

Filed Jun. 28, 1978, Ser. No. 920,313
Int. Cl.² G01B *11/00*
U.S. Cl. 364—571 **19 Claims**



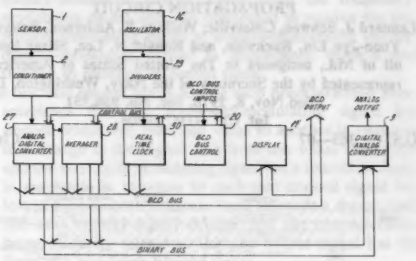
1. A process for assembling and calibrating an instrument which measures optical parameters of a suspect optical system placed within a sampling interval, the instrument having its own optical train of assembled optical elements including a light source, a detector, and means for measuring deflection of light between the light source and the detector caused by the suspect optical system, the instrument also having a dedicated computer for converting the measured deflections into a desired form of optical parameters of the suspect optical system, the dedicated computer having a CPU, the dedicated computer further making use of a plurality of constants stored in a memory unit, the assembly and calibration process comprising the steps of: permanently assembling the optical train to loose production tolerances; placing sequentially a sequence of optical test elements, each of which test elements has known deflection-causing properties, within the sampling interval; storing the deflections caused by the test elements in combination with the instrument; calculating the plurality of constants on the basis of the values of the stored deflections and the known deflection causing properties of the test elements; writing the calculated constants into the memory unit; and connecting the memory unit with the dedicated computer.

4,199,817

DIGITAL AVERAGER

Charles T. Conkling, Wyandanch, and Donald B. Scarl, East Massapequa, both of N.Y., assignors to Conkling Laboratories, Massapequa, N.Y.

Continuation-in-part of Ser. No. 762,553, Jan. 25, 1977, abandoned. This application Mar. 27, 1978, Ser. No. 890,769
Int. Cl.² G06F *15/20, 15/36*
U.S. Cl. 364—734 **4 Claims**



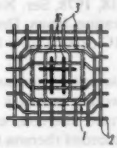
1. An averaging system for selectively indicating instantaneous and average values of a quantity, wherein a sensor is provided to produce an electrical signal corresponding to the quantity, said system comprising means for converting said electrical signal to a first binary and first BCD signal corresponding to the instantaneous value of said electrical signal over a determined period, means for producing second binary and second BCD signals, a binary bus, a BCD bus, control means for selectively applying said first and second binary and first and second BCD signals to said binary and BCD buses respectively, and digital display means connected to said BCD bus.

4,199,818

ELECTRICAL CONNECTION MATRIX PLANE

Jury I. Danilin, ulitsa Savushkina, 9, kv. 64; Konstantin A. Maringulov, ulitsa Lomonosova, 12, kv. 68, and Evgeny N. Pavlov, Lesnoi prospekt, 32, kv. 8, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 604,076, Aug. 12, 1975, abandoned. This application Apr. 13, 1977, Ser. No. 787,263
Int. Cl.² H01F *7/06*
U.S. Cl. 365—70 **6 Claims**



1. An electrical woven electrical connection matrix plane made from interwoven insulation threads and X and Y current conductors assembled into groups, each group consisting of at least two said parallel current conductors extending along one axis and intersecting an insulation field formed by said interwoven insulation threads alternatingly, so that at intersections said current conductors running along opposite coordinate axes are disposed on different surfaces of said insulation field, contact nodes at preset intersections and in the form of a mesh comprised of interweaving of said current conductors of respective X and Y groups brought out at one surface of the insulation field, at least one portion of said electrical connection matrix plane having a loose-hanging layer of said parallel current

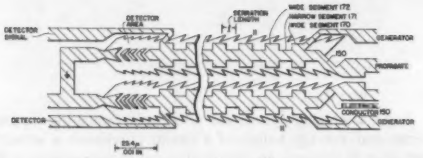
conductors from several said groups extending along one axis positioned above the layer formed by insulation threads interwoven with several adjacent groups of said current conductors extending along the other axis; said loose hanging layer being provided for connecting circuit elements in portions having no contact nodes.

4,199,819

FIELD DETERMINED CROSS-TIE MEMORY PROPAGATION CIRCUIT

Leonard J. Schwee, Colesville; Wallace E. Anderson, Beltsville; Yuan-Jye Liu, Rockville, and Ronald N. Lee, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 8, 1978, Ser. No. 958,751
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—87 **2 Claims**



1. A serially accessible crosstie memory comprising:
a thin-film strip of magnetic material of uniform thickness exhibiting a continuous, stationary domain wall spaced between opposite oblong serriform margins;
each of the serriform margins formed by adjacent unidirectionally oriented denticles of equal serration length;
an electrical conductor of a substance characterized by a lower resistivity than the magnetic material, deposited on one surface of the thin-film strip and spaced between opposite serriform margins;
the electrical conductor having alternate serration lengths of greater width than adjoining intermediate serration lengths.

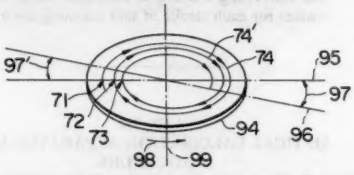
4,199,820

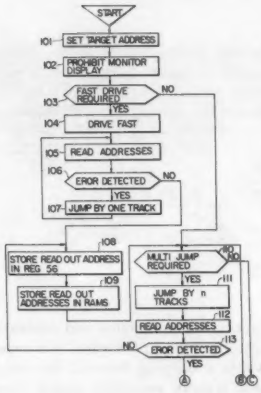
RANDOM ACCESS STORAGE APPARATUS WITH A MOVABLE RECORDING MEDIUM

Masatoshi Ohtake, Hachioji; Takeshi Maeda, Kokubunji, and Morishi Izumita, Inagi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 18, 1978, Ser. No. 970,331
Claims priority, application Japan, Dec. 16, 1977, 52-150534
Int. Cl.[2] G11C *8/00, 13/04;* G11B *7/00*
U.S. Cl. 365—234 **7 Claims**

1. A random access storage apparatus comprising:
a rotary recording medium having a plurality of signal recording tracks formed thereon, each track having an identifier number recorded thereon for identifying a signal recorded thereon;
reading means for detecting signals from the respective tracks, said reading means being disposed in opposition to the surface of said recording medium and in non-contacting relation therewith for selectively detecting a signal from one of the plurality of tracks opposite thereto;
entering means for entering the identifier number of a signal to be read out by said reading means;
moving means responsive to the entered identifier number for moving said reading means relative to said recording medium to a position proximate to the track having the entered identifier number;
number detecting means coupled with said reading means for detecting from the signal read out by said reading means the identifier number in the signal;
first storage means coupled with said number detecting means for storing the detected identifier number;
error detecting means coupled with said first storage means for detecting whether or not the stored content thereof has an error and for providing an error indicative signal or a normal indicative signal in accordance with the detection;
first output means coupled with said error detecting means for providing a signal to said reading means for unconditionally changing the track to-be-read by a predetermined number of tracks when said error detecting means provides an error indicative signal in response to the identifier number being read for the first time after said reading





means has been moved by said moving means, said first output means repeated providing the track changing signal until said error detecting means provides the normal indicative signal;
difference means coupled with said error detecting means for detecting a difference between the content of said first storage means and the entered identifier number when said error detecting means has provided the normal indicative signal for the first time; and
second outmeans coupled with said difference detecting means for providing a signal to said reading means for sequentially changing the track to-be-read to adjacent tracks in a direction in which the detected difference decreases.

4,199,821

DATA TRANSMISSION

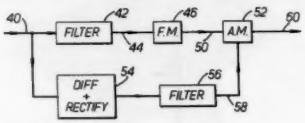
Peter J. Munday, Reading, England, assignor to Racal Group Services Limited, England

Filed May 18, 1978, Ser. No. 907,206

Claims priority, application United Kingdom, May 20, 1977, 21245/77

Int. Cl.[2] H03K 7/10

U.S. Cl. 375—60 8 Claims



1. A system for transmitting digital data by frequency modulation of a carrier signal, comprising

a first filter connected to receive and filter the digital data to produce a frequency modulating signal,

frequency-modulating means connected to receive the frequency modulating signal and to frequency-modulate a carrier signal in dependence thereon,

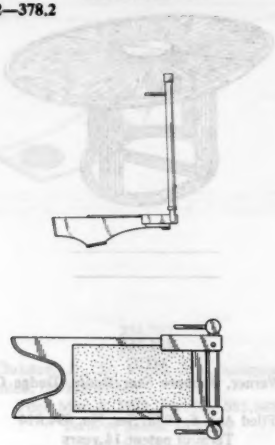
a transition-detecting circuit connected to receive the digital data and to produce a control signal in response to each transition of the digital data, the polarity of each control signal being the same and being independent of the direction of the respective transition,

a second filter connected to receive and filter the control signals to produce an amplitude modulating signal, and

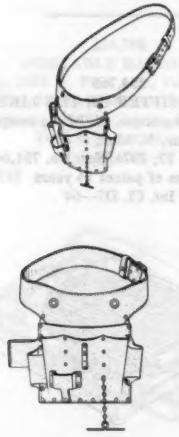
amplitude-modulating means connected to receive the frequency-modulated carrier signal from the frequency-modulating means and also connected to receive the amplitude modulating signal to amplitude-modulate the frequency-modulated carrier in dependence thereon and thereby to produce an output signal,

the first and second filters having such predetermined characteristics that the frequency-modulating signal has smooth transitions from one value to another in response to a change in the digital data from one value to another and the amplitude modulating signal has a smooth increase in amplitude in response to each said control signal followed by a smooth decrease back towards a datum until the next control signal occurs, and the characteristics being mutually related so that the output signal has the form of a band-pass filtered signal.

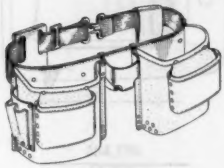
254,756
BOOTJACK
James N. Brown, P.O. Box 697, Seminole, Okla. 74868
Filed Apr. 13, 1978, Ser. No. 896,100
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—378.2



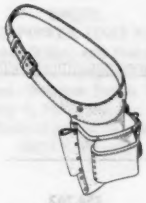
254,757
TOOL BELT
Harvey R. Rodstein, Los Angeles, Calif., assignor to Action Leathercraft, Inc., Commerce, Calif.
Filed Jul. 17, 1978, Ser. No. 925,412
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400

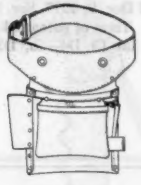


254,758
CARPENTER'S APRON
Harvey R. Rodstein, Los Angeles, Calif., assignor to Action Leathercraft, Inc., Commerce, Calif.
Filed Jul. 17, 1978, Ser. No. 925,413
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400

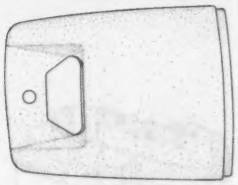


254,759
TOOL POUCH
Harvey R. Rodstein, Los Angeles, Calif., assignor to Action Leathercraft, Inc., Commerce, Calif.
Filed Aug. 9, 1978, Ser. No. 925,421
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400

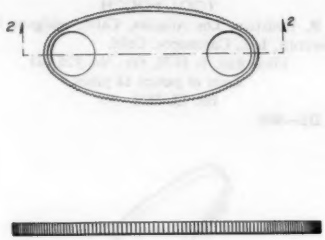




254,760
SEAT BELT BUCKLE
Paul J. Petlewski, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 28, 1977, Ser. No. 772,504
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—408



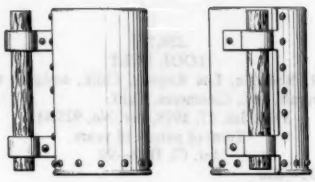
254,761
PULL TAB FOR A SLIDE FASTENER OR THE LIKE
Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.
Filed Jan. 19, 1978, Ser. No. 870,669
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—415



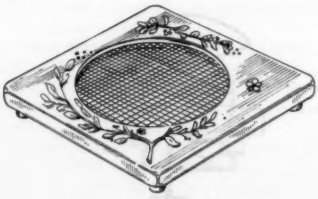
254,762
COMBINED TOOTHBRUSH AND DENTAL FLOSS HOLDER
Per K. Lundvik, Junkerngasse 40, CH-3011 Bern, Switzerland
Filed Dec. 9, 1977, Ser. No. 859,652
Term of patent 14 years
Int. Cl. D4—*02*; D24—*99*
U.S. Cl. D4—28

254,763
TABLE
Gabriella Crespi, Via Turati, 3, Milano, Italy
Filed Oct. 7, 1977, Ser. No. 840,348
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

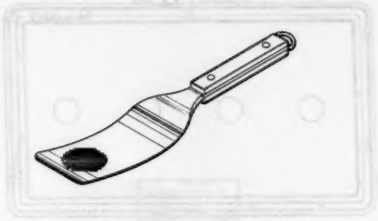
254,764
MUG
Norbert E. Werner, Jetmore Star Route, Dodge City, Kans. 67801
Filed Apr. 6, 1978, Ser. No. 894,014
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9



254,765
FLOUR SIFTER OR THE LIKE
Phyllis M. Benia, Albuquerque, N. Mex., assignor to Screenz Products, Albuquerque, N. Mex.
Filed Dec. 17, 1976, Ser. No. 751,663
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47

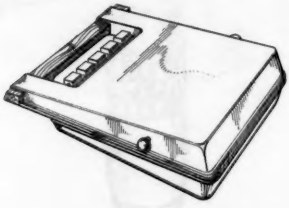


254,766
SPATULA
Louis J. Christen, Jr., St. Louis, Mo., assignor to Christen Incorporated, St. Louis, Mo.
Filed Mar. 9, 1978, Ser. No. 885,093
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—102

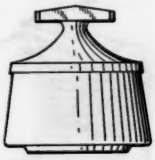


254,767
TONGS
Louis J. Christen, Jr., St. Louis, Mo., assignor to Christen Incorporated, St. Louis, Mo.
Filed Mar. 9, 1978, Ser. No. 885,088
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—105

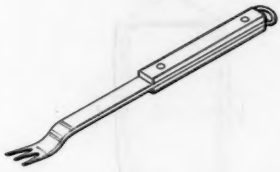
254,768
PORTABLE BARBECUE
Larry M. Lynn, 2204 W. First Ave., Vancouver, B. C., Canada
Filed Jul. 7, 1977, Ser. No. 813,454
Claims priority, application Canada, Mar. 30, 1977, 3003771
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110



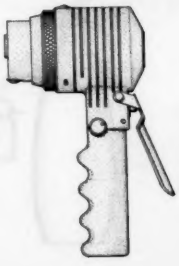
254,769
PRESSURE COOKER REGULATOR
Melvin H. Boldt, Glenview; Thurber H. Morrison, Evanston, and James P. Stevens, Oak Park, all of Ill., assignors to National Presto Industries, Inc., Eau Claire, Wis.
Continuation-in-part of Ser. No. 838,768, Oct. 3, 1977. This application Apr. 10, 1978, Ser. No. 895,283
Term of patent 14 years
Int. Cl. D7—*02*; D10—*04*
U.S. Cl. D7—129



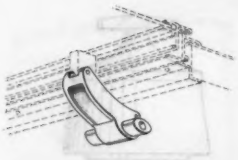
254,770
FORK
Louis J. Christen, Jr., St. Louis, Mo., assignor to Christen Incorporated, St. Louis, Mo.
Filed Mar. 9, 1978, Ser. No. 885,092
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—151



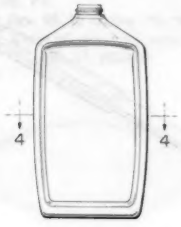
254,771
PNEUMATIC POWER UNIT FOR SANDER
David P. Taylor, Ocean Ridge, and Donald P. Olander, Deerfield Beach, both of Fla., assignors to Florida Pneumatic Manufacturing Corp., Boynton Beach, Fla.
Filed Sep. 2, 1977, Ser. No. 830,218
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—62



254,772
LATCHING HANDLE FOR A VENT
Elwood W. Buck, Jr., Pasadena, Calif., assignor to D G Shelter Products Company, City of Industry, Calif.
Filed Jun. 20, 1977, Ser. No. 807,822
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—302

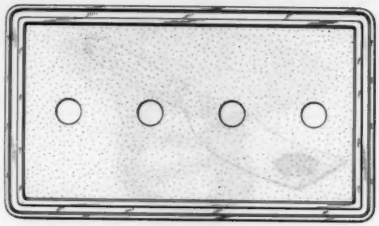


254,773
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Nov. 18, 1977, Ser. No. 853,143
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143



254,774
BOTTLE OR SIMILAR ARTICLE
Vincent M. Shortino, Independence, Mo., assignor to Ethyl Development Corporation, Baton Rouge, La.
Filed Dec. 19, 1977, Ser. No. 862,235
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143

254,775
JEWELRY DISPLAY TRAY
Max Falk, New York, N.Y., assignor to Max Falk Associates, Inc., New York, N.Y.
Filed Aug. 5, 1977, Ser. No. 822,223
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—171



254,776
FOOD CONTAINER
Richard T. Edwards, Middletown, N.Y., assignor to Genpak Corporation, South Glens Falls, N.Y.
Filed Jun. 20, 1977, Ser. No. 808,249
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—183

254,777
CAN
Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.
Filed Aug. 15, 1977, Ser. No. 824,663
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—217

254,778

ULTRASONIC WAVE THICKNESS METER

Toyohiko Kitada, Sagamihara; Kunio Iiyama; Kazuyuki Ito, both of Yokohama; Minoru Tamura, Chigasaki, and Takanori Arioka, Tokyo, all of Japan, assignors to Tokyo Keiki Company Limited, Tokyo, Japan

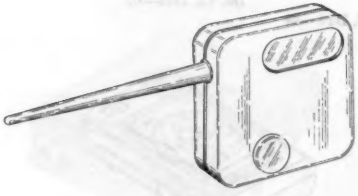
Filed Jan. 5, 1978, Ser. No. 867,172
Claims priority, application Japan, Jul. 7, 1977, 52-26412
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

254,779

DIGITAL THERMOMETER

Eugene J. Sulek, Lubbock, and William J. Lawrence, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 23, 1978, Ser. No. 880,539
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57

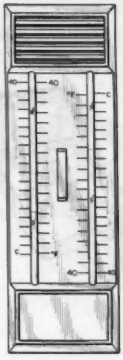


254,780

MAXIMUM/MINIMUM REGISTERING THERMOMETER OR SIMILAR ARTICLE

Jonathan H. Mueller, Arden, N.C., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,667
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—58



254,781

PRESSURE GAUGE

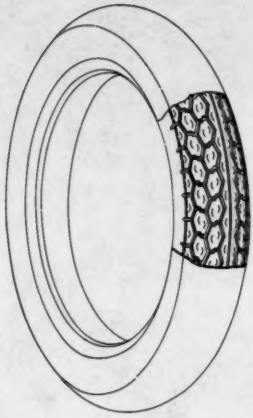
Harold K. Holm, 16651 Townhouse Dr., Tustin, Calif. 92680

Filed Sep. 16, 1977, Ser. No. 834,138
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—85

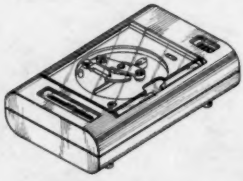
254,782
WEIGHING SCALE
Helmut Klaus, Remshalden, Fed. Rep. of Germany, assignor to Keiper Dynavit GmbH & Co., Kaiserslautern, Fed. Rep. of Germany
Filed Mar. 15, 1978, Ser. No. 886,912
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 196
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91

254,783
DIAMOND RING
Josef J. Barr, 293 S. County Rd., Palm Beach, Fla. 33480
Filed Feb. 17, 1978, Ser. No. 878,930
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—36

254,784
TIRE
Nobuyuki Sakaki, Kobe, Japan, assignor to Dunlop Limited
Filed Jan. 16, 1978, Ser. No. 870,019
Claims priority, application Japan, Jul. 22, 1977, 29053
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—145

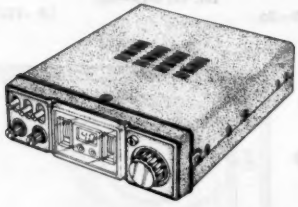


254,785
CARTRIDGE RECORD PHONOGRAPH
Katsumi Watanabe, Kawasaki, Japan, assignor to Yugen Kaisha Watanabe Kenkyusho, Kawasaki, Japan
Filed May 6, 1977, Ser. No. 794,633
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—14

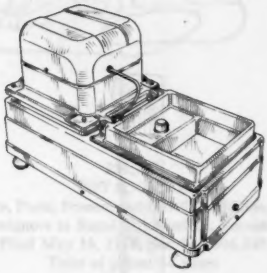


254,786
LOUDSPEAKER GRILLE
John R. Ballantyne, Pacific Palisades, Calif., assignor to Superscope, Inc., Chatsworth, Calif.
Filed Nov. 23, 1977, Ser. No. 854,087
Term of patent 14 years
Int. Cl. D14—*99, 01*
U.S. Cl. D14—39

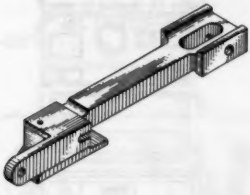
254,787
CITIZEN'S BAND TRANSCEIVER
Shuhei Taguchi, Hirakata, and Tsutomu Murakami, Neyagawa, both of Japan, assignors to Matsushita Electric Ind. Co., Ltd., Kadoma, Japan
Division of Ser. No. 778,697, Mar. 17, 1977. This application Sep. 6, 1978, Ser. No. 940,643
Claims priority, application Japan, Sep. 20, 1976, 51-37493; Sep. 20, 1976, 51-37494; Dec. 9, 1976, 51-48130
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—71



254,788
LIQUID DISPENSING VACUUM CLEANER
Jelle G. Nauta, R.R. #4, Stouffville, Ontario, Canada
Filed Oct. 5, 1977, Ser. No. 839,785
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—52



254,789
ARM FOR A BELT GRINDING MACHINE
Elwin H. Fleckenstein, Alden, N.Y., assignor to Dynabrade, Inc., Tonawanda, N.Y.
Filed Jul. 17, 1978, Ser. No. 924,994
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126

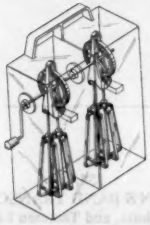


254,790
COMBINED MINIATURE CAMERA AND HOLDING DEVICE FOR THE SAME
Heinz Waaske, Mascherode, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke, Brunswick, Fed. Rep. of Germany
Division of Ser. No. 687,529, May 18, 1976, Pat. No. Des. 250,121. This application Jun. 29, 1977, Ser. No. 811,060
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1975, MR 1070; Mar. 12, 1976, MR 1082
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—06

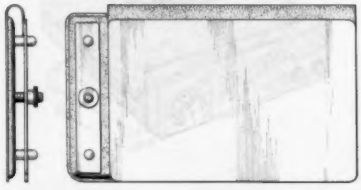
254,791
PHOTOGRAPHIC CAMERA HAVING AN ELECTRONIC FLASH UNIT
David E. Hansen, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 8, 1978, Ser. No. 876,076
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—06

254,792
ELECTRIC GUITAR
Clyde E. Edwards, Logan, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio
Filed Feb. 22, 1978, Ser. No. 880,320
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

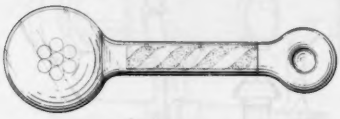
254,793
DEMONSTRATOR FOR INDICATING THE EFFECT OF ADDITIVE IN ENGINE OIL AND THE LIKE
Clinton H. Morey, 166 Leisure World, Mesa, Ariz. 85206
Filed Jan. 11, 1978, Ser. No. 868,668
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



254,794
COMBINED WRITING BOARD AND PAD HOLDER
Eric R. Hayman, Maple Glen; John C. Hensel, Perkasie, and Ingomar O. Koch, Warrington, all of Pa., assignors to Safeguard Business Systems, Inc., Fort Washington, Pa.
Filed Apr. 25, 1978, Ser. No. 900,062
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—86

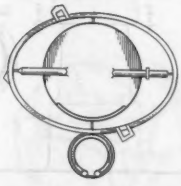


254,795
TOY RATTLE
Richard A. Chase, Baltimore, Md.; D. Michael Williams, Morin Heights, Canada, and Thomas J. Alexandris, Cranbury, N.J., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Mar. 8, 1978, Ser. No. 884,773
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65

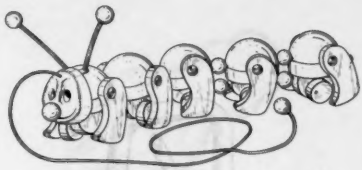


254,796
SPINNING TOY
Richard Patterson, P.O. Box 197, Pasadena, Calif. 91101
Filed Jul. 21, 1977, Ser. No. 817,702
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—92

254,797
SPINNER CONSTRUCTION KIT
Sam Kupperman, 7033 N. Kedzie, Chicago, Ill. 60645, and Dennis Kupperman, 3838 Chester Dr., Glenview, Ill. 60025
Filed Apr. 13, 1977, Ser. No. 787,076
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—93



254,798
FIGURE TOY
Louis Johnstone, Warlingham, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Jan. 26, 1978, Ser. No. 872,643
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

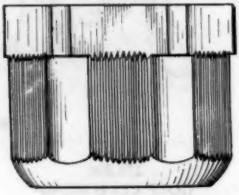


254,799
TOY ANIMAL
John B. Shore, Paris, France, and David L. Phillips, Willowdale, Canada, assignors to Regal Toy Limited, Toronto, Canada
Filed May 16, 1978, Ser. No. 906,330
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—161

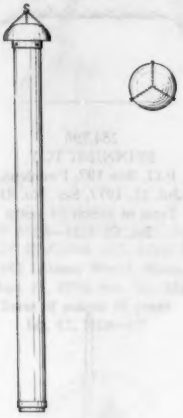
254,800
GOLF CLUB HEAD
Henry J. Diana, 9575 Cain Dr., NE., Warren, Ohio 44484
Filed Apr. 19, 1978, Ser. No. 912,050
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219

254,801
FAUCET
Carlo Santi, Milan, Italy, assignor to Rubinetterie Stella S.p.A., Milan, Italy
Filed Aug. 29, 1977, Ser. No. 828,719
Claims priority, application Italy, Mar. 8, 1977, 20844/77[U]
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23

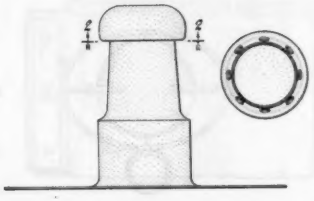
254,802
HOSE COUPLING COLLAR
Jerry R. Hayes, Peoria, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.
Filed Oct. 3, 1977, Ser. No. 838,965
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—44



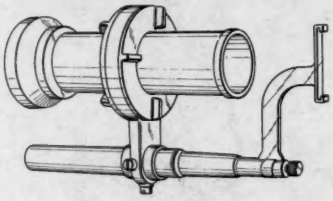
254,803
AIR CIRCULATOR
Douglas B. Rusth, 1335 SW. 66th Ave., Apt. 404, Portland, Oreg. 97225, and David A. Martin, 14025 SW. Bonnie Brae Ct., Beaverton, Oreg. 97005
Filed Nov. 21, 1977, Ser. No. 853,623
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



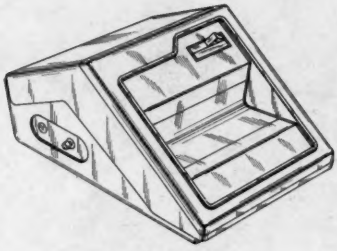
254,804
ROOF VENT
James W. Ballard, 34934 Elmira, Livonia, Mich. 48150, and Larry R. Ballard, 18633 Negaunee, Redford Township, Wayne County, Mich. 48240
Filed Dec. 11, 1978, Ser. No. 968,385
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—153



254,805
DENTAL HOLDER FOR X-RAY FILMS
Gunnar Edeland, Tvargatan 5, S619 00 Karlskoga, Sweden
Filed Jun. 15, 1977, Ser. No. 806,919
Claims priority, application Sweden, Feb. 11, 1977, 77328
Term of patent 3½ years
Int. Cl. D24—*01*
U.S. Cl. D24—2



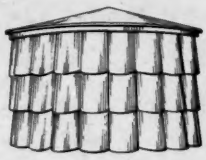
254,806
ELECTRONIC HEMADYNAMOMETER
Isao Kitai, and Tsutomu Yamasaki, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corp.), Osaka, Japan
Filed May 16, 1978, Ser. No. 906,312
Claims priority, application Japan, Nov. 21, 1977, 52-46601
Term of patent 14 years
Int. Cl. D24—*01, 02*
U.S. Cl. D24—17



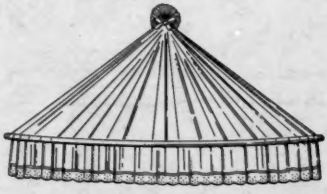
254,807
DIAPER FOR BABIES
John H. Kvamme, Askim; Leif U. R. Widlund, Mölnlycke; Tor A. Fröidh, Stenungsund, and Hans E. Walden, Göteborg, all of Sweden, assignors to Molnlycke AB, Goteborg, Sweden
Filed Aug. 3, 1977, Ser. No. 821,610
Claims priority, application Denmark, Feb. 4, 1977, 63/77; Feb. 4, 1977, 65/77
Term of patent 14 years
Int. Cl. D24—*04;* D2—*01*
U.S. Cl. D24—50

254,808
MALE CONTRACEPTIVE
Edward N. Meldahl, c/o United Nations Development Programme, P.O. Box 30218, Nairobi, Kenya
Filed Dec. 20, 1977, Ser. No. 862,354
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D24—99

254,809
ADJUSTABLE SHEET METAL AWNING
John J. Celestian, 286 E. 2nd St., Oswego, N.Y. 13126
Filed Dec. 27, 1977, Ser. No. 864,853
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—57

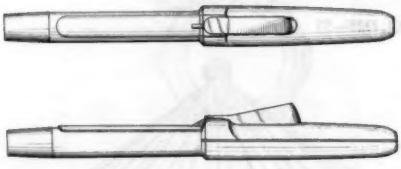


254,810
WALL CANOPY
Dorothy R. Hoover, Youngstown, Ohio, assignor to Plakie, Inc., Youngstown, Ohio
Filed Feb. 16, 1978, Ser. No. 878,662
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—57



254,811
CIGARETTE PUNCTURING ARTICLE OR THE LIKE
Meyer Katz, 38 W. Nippon St., Philadelphia, Pa. 19119
Filed May 12, 1978, Ser. No. 905,158
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51

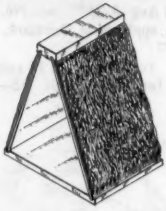
254,812
HAIR CURLING IRON
Fran MacGregor, New Britain, Conn., assignor to Clairol Incorporated, New York, N.Y.
Filed Mar. 30, 1978, Ser. No. 891,783
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



254,813
CAT EXERCISER
Gary R. Kossar, P.O. Box 347, North Grafton, Mass. 01536
Filed Mar. 30, 1978, Ser. No. 891,939
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42

254,814
CAT EXERCISER
Gary R. Kossar, P.O. Box 347, North Grafton, Mass. 01536
Filed Aug. 18, 1978, Ser. No. 935,076
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42

254,815
CAT EXERCISER
Gary R. Kossar, P.O. Box 347, North Grafton, Mass. 01536
Filed Feb. 21, 1979, Ser. No. 13,800
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF APRIL, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Stucki Company: *See—*
Wiebe, Donald, 4,198,911, Cl. 105-197.0DH.

A-T-O Inc.: *See—*
Winiasz, Michael E.; and Long, James M., 4,199,291, Cl. 414-416.000.

Abbott Laboratories: *See—*
Martin, George J., 4,199,153, Cl. 277-4.000.

Abe, Tadashi: *See—*
Ohrui, Tetsuya; Kato, Michio; Ayano, Masami; Kawaguchi, Tsunejiro; and Abe, Tadashi, 4,199,410, Cl. 203-49.000.

Abel, Philip C. Amniotomy instrument. 4,198,985, Cl. 128-361.000.

Abolins, Andrew, to Strick Corporation. Vehicle for transporting compressible materials. 4,199,297, Cl. 414-525.00R.

Access-O-Trac: *See—*
Albrecht, Leonard N.; and Taylor, Bert C., Jr., 4,199,188, Cl. 296-100.000.

Achelpohl, Fritz, to Windmoller & Holscher. Lifting gear for filled sacks. 4,199,184, Cl. 294-106.000.

Acme Machinery Company: *See—*
Damron, Earl M.; and Lipps, Jack I., 4,199,193, Cl. 299-31.000.

Adachi, Keiichi: *See—*
Hinata, Masanao; Mihara, Yuji; Shishido, Tadao; and Adachi, Keiichi, 4,199,360, Cl. 430-503.000.

Adam, John D.: *See—*
Patterson, Ralph W.; O'Keeffe, Terence W.; and Adam, John D., 4,199,737, Cl. 333-154.000.

Adelmann, Siegfried; Margotte, Dieter; and Nouvertne, Werner, to Bayer Aktiengesellschaft. Modified polycarbonates and a process for their preparation. 4,199,540, Cl. 264-22.000.

Agrawal, Purushottam D.; and Griesing, John E., to Monsanto Company. Forming molecularly oriented containers from reheated preforms. 4,199,629, Cl. 428-35.000.

Agraz-Guerena, Jorge; and Fulton, Alan W., to Bell Telephone Laboratories, Incorporated. Integrated circuit and method for fabrication thereof. 4,199,775, Cl. 357-46.000.

Ahmed, Abul A. M. Plasma energy production. 4,199,402, Cl. 176-3.000.

Ahmed, Adel A. A., to RCA Corporation. Integrated injection logic with floating reinjectors. 4,199,776, Cl. 357-46.000.

Ahrens, Allan F.: *See—*
Martinelli, Robert M.; and Ahrens, Allan F., 4,199,805, Cl. 363-60.000.

Aida Engineering, Ltd.: *See—*
Nakagawa, Takeo; Suzuki, Kiyoshi; and Okawa, Hiroyasu, 4,198,884, Cl. 76-107.00R.

Aihara, Tetsuo: *See—*
Nakayama, Yasuharu; and Aihara, Tetsuo, 4,199,487, Cl. 260-23.0AR.

Aishin Seiki Kabushiki Kaisha: *See—*
Nogami, Tomoyuki; and Fujii, Takashi, 4,198,824, Cl. 60-535.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Ishikawa, Kazuo, 4,199,048, Cl. 192-0.052.

Aizawa, Tatsuo: *See—*
Matsumoto, Shoji; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,199,356, Cl. 430-126.000.

Akebono Brake Industry Co. Ltd.: *See—*
Maehara, Toshihumi, 4,199,197, Cl. 303-24.00F.

AKG Akustische u. Kino-Gerate Gesellschaft m.b.H.: *See—*
Renner, Heinz, 4,199,667, Cl. 179-121.00R.

Akiyama, Junetsu; Fuchida, Takayoshi; Taya, Akira; Nagafuchi, Kazunori; Kohmoto, Kohtaro; and Kobuya, Tomohiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp. 4,199,707, Cl. 313-487.000.

Aktiebolaget Bofors: *See—*
Forshufvud, Ragnar; and Johansson, Arnold, 4,199,256, Cl. 356-247.000.

Albany International Corp.: *See—*
Parker, Roy B., 4,199,635, Cl. 428-95.000.

Albrecht, Leonard N.; and Taylor, Bert C., Jr., to Access-O-Trac. Vehicle accessory system. 4,199,188, Cl. 296-100.000.

Aldridge, Tomm V.; and Haas, Richard M., to Sprague Electric Company. Magnetic core with magnetic ribbon in gap thereof. 4,199,744, Cl. 336-178.000.

Ali, Mian Z.: *See—*
Dill, George D.; Tomozawa, Atsushi; Fillion, James R.; Ali, Mian Z.; Burwell, Clyde E.; Warner, Brady H., Jr.; and Jones, Richard W., 4,199,660, Cl. 370-50.000.

Alirot, Jean-Louis; and Le Gardeur, Rene, to Commissariat a l'Energie Atomique. Injection of an electron beam. 4,199,709, Cl. 315-4.000.

Alito, Paul N.: *See—*
Massey, Carman J.; and Alito, Paul N., 4,198,890, Cl. 84-1.010.

Allen, Lee R. Equipment for installing insulation. 4,199,280, Cl. 406-56.000.

Alois Kober KG, Firma: *See—*
Wohrle, Rudolf; Unterstab, Roland; and Kober, Herbert, 4,199,135, Cl. 269-100.000.

Amax Inc.: *See—*
Laferty, John M.; Johnson, James L.; and Burwell, Blair T., 4,199,551, Cl. 423-6.000.

American Can Company: *See—*
Maroszek, Raymond V., 4,199,059, Cl. 206-45.180.

American Cyanamid Company: *See—*
Berkelhammer, Gerald; and Kameswaran, Venkataraman, 4,199,595, Cl. 424-304.000.
Holme, Rudolph N., 4,199,064, Cl. 209-12.000.
Wang, Samuel S.; Lewellyn, Morris E.; and Smith, Eugene L., Jr., 4,199,065, Cl. 209-166.000.
Zweig, Arnold; and Fischer, Robert G., Jr., 4,199,510, Cl. 260-326.00S.

American Filtrona Corporation: *See—*
Graham, John F.; and Hardy, Donald, 4,198,853, Cl. 73-38.000.

American Hoechst Corporation: *See—*
Saukaitis, John C., 4,199,346, Cl. 71-88.000.

American Hospital Supply Corporation: *See—*
Sanderson, Robert A.; and Chan, Patrick S., 4,199,265, Cl. 366-274.000.

Amerock Corporation: *See—*
Lense, Robert F.; and Kuehn, Joseph R., 4,199,058, Cl. 206-45.140.
Livingston, Richard D., 4,199,200, Cl. 308-3.800.

Ami-Rav, Aviv. Method and apparatus for the separation of isotopes. 4,199,679, Cl. 250-251.000.

Amiet AG: *See—*
Gisiger, Urs, 4,198,837, Cl. 70-71.000.

Ammermann, Eberhard: *See—*
Rentzea, Costin; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,199,503, Cl. 260-146.00R.

Amos, Richard W.: *See—*
Miller, Kirk D.; Flood, John B.; Dimou, George; Kara, Frederick E.; and Amos, Richard W., 4,199,353, Cl. 75-130.00R.

AMP Incorporated: *See—*
Cherian, Gabriel B.; Scheingold, William S.; and Zimmerman, Richard H., 4,199,209, Cl. 339-59.00M.

Anderson, Charles H.; and Cosentino, Louis S., to RCA Corporation. Modulator structure for a flat panel display device. 4,199,705, Cl. 313-422.000.

Anderson, Wallace E.: *See—*
Schwee, Leonard J.; Anderson, Wallace E.; Liu, Yuan-Jye; and Lee, Ronald N., 4,199,819, Cl. 365-87.000.

Andre, Pierre A.: *See—*
Raffy, Pierre M.; Andre, Pierre A.; Girault, Jean-Pierre Y. B.; Richter, Gerhard; and Thevenin, Jean-Claude P. H. P., 4,199,295, Cl. 415-115.000.

Andrews, Paul A., to Polaroid Corporation. Method of using a laminating carrier. 4,199,391, Cl. 156-324.400.

Andros Incorporated: *See—*
Jassawalla, Jal S., 4,199,307, Cl. 417-474.000.

Angelucci, Francesco: *See—*
Penco, Sergio; Gozzi, Fausto; Angelucci, Francesco; and Arcamone, Federico, 4,199,571, Cl. 424-180.000.

Angle, Rodney L., to RCA Corporation. CCD Multiple channel network. 4,199,691, Cl. 307-221.00D.

Angres, Isaac, to United States of America, Navy. Method for the production of hexanitrostilbene. 4,199,532, Cl. 260-645.000.

Anic, S.p.A.: *See—*
Prevedello, Aldo; and Brunelli, Maurizio, 4,199,516, Cl. 260-346.110.

Antos, George J., to UOP Inc. Hydrocarbon conversion with an acidic multimetallic catalytic composite. 4,199,438, Cl. 208-139.000.

Aoki, Syunichi: *See—*
Fujikawa, Tsuneo; Aoki, Syunichi; and Sasaki, Naoki, 4,198,906, Cl. 101-42.000.

Aoki, Yasuhiro, to Teibow Company Limited. Dental therapeutic device. 4,198,977, Cl. 433-136.000.

Aono, Syunji; and Toyoda, Atsushi, to Nippon Gakki Seizo Kabushiki Kaisha. Covering film for casting process by vacuum sealed molding. 4,199,641, Cl. 428-213.000.

Appleton, Joseph H.: *See—*
Kaselaan, Valdur; and Appleton, Joseph H., 4,198,856, Cl. 73-40.700.

Applied Power Inc.: *See—*
Russell, H. Vernon; and Russell, Jeffrey V., 4,198,847, Cl. 72-462.000.

Araki, Tadashi; Seito, Hatsuo; Funabashi, Masayuki; Saito, Ritaro; and Seguchi, Koji, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method of and apparatus for removing nitrogen oxides from the gases containing nitrogen oxides. 4,199,554, Cl. 423-239.000.

Arcamone, Federico: *See*—
Penco, Sergio; Gozzi, Fausto; Angelucci, Francesco; and Arcamone, Federico, 4,199,571, Cl. 424-180.000.

Argus Chemical Corp.: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,199,495, Cl. 260-45.85S.

Arkans, Edward J., to Kendall Company, The. Compression device with sleeve retained conduits. 4,198,961, Cl. 128-24.00R.

Armanet, Jean-Michel: *See*—
Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, 4,199,371, Cl. 127-37.000.

Arthur D. Little, Inc.: *See*—
McCullough, John E., 4,199,308, Cl. 418-55.000.

Asahi Denka Kogyo K.K.: *See*—
Toyoshima, Yasuo; Ito, Tadasu; Maruzeni, Shouji; Yasuda, Nozomi; and Terada, Kimio, 4,199,611, Cl. 426-607.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Kamiya, Shunji; Satake, Kunio; Sone, Tomiho; and Teraoka, Tsutomu, 4,199,490, Cl. 260-29.70D.

Asam, Adolf R., to International Telephone and Telegraph Corporation. Method of fabricating high strength optical preforms. 4,199,337, Cl. 65-3.00A.

ASEA Aktiebolag: *See*—
Juhlin, Lars-Erik, 4,199,804, Cl. 363-51.000.

Ashland Oil, Inc.: *See*—
Carlos, Donald D., 4,199,431, Cl. 208-3.000.

Asplund, Arne. Apparatus for producing disintegrated material, preferably pulp. 4,199,114, Cl. 241-246.000.

Asten Group, Inc.: *See*—
Liu, Thomas J.; and Cottigny, Cyrille M., deceased, 4,199,401, Cl. 162-358.000.

Atlantic Richfield Company: *See*—
Sill, Richard C., 4,199,376, Cl. 136-89.0FC.
Smith, Robert H., 4,199,325, Cl. 44-1.00R.
Wostl, Wolfgang J.; Segal, Jack S.; Roach, Thomas L.; and Moore, Robert A., 4,199,100, Cl. 235-381.000.

Audi NSU Auto Union Aktiengesellschaft: *See*—
van den Boom, Johannes; Salwesky, Gert; Godel, Frank-Uwe; and Leitner, Wilfried, 4,199,128, Cl. 248-562.000.

Autech: *See*—
Harris, David E., 4,199,259, Cl. 356-387.000.

Automation Industries, Inc.: *See*—
Meyer, Frank, 4,199,690, Cl. 307-41.000.

Avtex Fibers Inc.: *See*—
Smith, Frederick R., 4,199,367, Cl. 106-168.000.

Awalt, Susan L.: *See*—
Linko, Peter J., III; Butts, William R.; Awalt, Susan L.; and Glynn, Charles E., 4,198,839, Cl. 72-199.000.

Awaya, Juichi: *See*—
Omura, Satoshi; Iwai, Yuzuru; Awaya, Juichi; Takahashi, Yoko; and Oiwa, Ruiko, 4,199,514, Cl. 260-343.30R.

Ayano, Masami: *See*—
Ohrui, Tetsuya; Kato, Michio; Ayano, Masami; Kawaguchi, Tsunejiro; and Abe, Tadashi, 4,199,410, Cl. 203-49.000.

Babson, Arthur L.; and Turner, James E., to Warner-Lambert Company. Removal of heparin from blood plasma samples using an insoluble protamine reaction product. 4,199,502, Cl. 260-121.000.

Bacus, James W., to Rush-Presbyterian-St. Luke's Medical Center. Automated method and apparatus for classification of cells with application to the diagnosis of anemia. 4,199,748, Cl. 340-146.3CA.

Bader, Antonie: *See*—
Bader, Eugen, deceased; Bader, Antonie, administratix; and Jauch, Kurt, 4,199,285, Cl. 409-206.000.

Bader, Antonie, administratix: *See*—
Bader, Eugen, deceased; Bader, Antonie, administratix; and Jauch, Kurt, 4,199,285, Cl. 409-206.000.

Bader, Eugen, deceased; by Bader, Antonie, administratix; and Jauch, Kurt, to Bader, Antonie. Machining unit having adjustable cutter spindle. 4,199,285, Cl. 409-206.000.

Baer, Massimo, to Monsanto Company. Reinforced polyarylene esters. 4,199,493, Cl. 260-40.00R.

Bailly, Jean C.: *See*—
Sandis, Stylianos; and Bailly, Jean C., 4,199,474, Cl. 252-429.00B.

Bairunas, Robert A.: *See*—
Gusmer, Frederick E.; Commette, Denis S.; and Bairunas, Robert A., 4,199,303, Cl. 417-216.000.

Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., to Rohm and Haas Company. Migration-resistant binder compositions for bonding nonwoven fibers; also methods and articles. 4,199,400, Cl. 162-146.000.

Baldwin, John J., to Merck & Co., Inc. 3-Amino-2-or-propoxy-tetrahydronaphthyl or indanyl-substituted imidazoles and use. 4,199,580, Cl. 424-248.550.

Baldwin, John L. E., to Independent Broadcasting Authority. Digital recording. 4,199,793, Cl. 360-78.000.

Baldyga, Joseph W., to C. J. Edwards Company. Self sealing lamp socket. 4,199,212, Cl. 339-107.000.

Balland, Jean, to Manufacture de Products Chimiques Protex. Whitening of cellulosic textiles. 4,199,320, Cl. 8-139.000.

Ballard, Clella N. Portable folding bed. 4,198,718, Cl. 5-93.00B.

Ballone, Leslie F., to Kyova Corporation. Conduit saddle. 4,199,009, Cl. 138-112.000.

Bally Manufacturing Corporation: *See*—
Dieckhaus, Joachim G., 4,199,143, Cl. 273-121.00A.

Bandel, Paolo: *See*—
Gallizia, Achille; and Bandel, Paolo, 4,199,315, Cl. 425-572.000.

Bannai, Kiyoshi: *See*—
Takeshita, Toru; Niki, Takao; Kawashima, Hiroyuki; and Bannai, Kiyoshi, 4,199,577, Cl. 424-236.000.

Banucci, Eugene G.; and Boldebuck, Edith M., to General Electric Company. Novel polyetheramide-imide phenolic resin blends. 4,199,651, Cl. 428-458.000.

Bard Laboratories, Inc.: *See*—
Yundt, Albert P., 4,199,649, Cl. 428-411.000.

Barford, Brian D.; Gilbert, Lawrence A.; Staab, Robert A.; Collins, Royal D.; and Ries, Charles R., to Procter & Gamble Company, The. Alkaline dishwasher detergent. 4,199,468, Cl. 252-103.000.

Barkalow, Clare E.; and Elam, James O., to Michigan Instruments, Inc. Cardiopulmonary resuscitator, defibrillator and monitor. 4,198,963, Cl. 128-53.000.

Barker, Lynn M.; and Guest, Randall V., to Terra Tek, Inc. Constant point of load application fracture specimen loading machine. 4,198,870, Cl. 73-799.000.

Barkov, Leonid A.: *See*—
Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Matveev, Vladimir A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; Mebel, Vladimir S.; Pravednikov, Erik V.; Rabinovich, Efim M.; and Ushakov, Valery K., 4,198,841, Cl. 72-224.000.

Barloy, Michel, to Rhone-Poulenc Industries. Process and apparatus for introducing and mixing a liquid in an essentially liquid medium. 4,199,557, Cl. 423-659.000.

Barnard, Walter C.; and Venne, Norbert E., to Whirlpool Corporation. Ice maker. 4,198,831, Cl. 62-320.000.

Barnes, Austen B. Malfunction detector. 4,199,727, Cl. 328-71.000.

Barnes Drill Co.: *See*—
Estabrook, Mark R., 4,199,455, Cl. 210-223.000.

Barnett, Charles J., to Eli Lilly and Company. Hydroxyimino-substituted aminoacetonitriles. 4,199,525, Cl. 260-453.0RW.

Barnidge, Inc.: *See*—
Barnidge, Thomas O., 4,198,795, Cl. 52-180.000.

Barnidge, Thomas O., to Barnidge, Inc. Stainless steel flooring. 4,198,795, Cl. 52-180.000.

Barry, Richard L., to TRX, Inc. Discrete electrical components. 4,199,745, Cl. 338-320.000.

Bartek, Gerhard; and Euer, Hartmut. Electromagnetic torsional stiffness element. 4,198,863, Cl. 73-430.000.

Bartok nee Berencsy, Piroska: *See*—
Matolcsy, Gyorgy; Bartok nee Berencsy, Piroska; Kiss, Bela; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo, 4,199,598, Cl. 424-315.000.

Bartos, James W., to General Electric Company. Method and apparatus for retaining seals. 4,199,151, Cl. 277-1.000.

BASF Aktiengesellschaft: *See*—
Rentzea, Costin; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,199,503, Cl. 260-146.00R.

BASF Farben & Fasern AG: *See*—
Strauss, Udo; and Streitberger, Hans-Joachim, 4,199,422, Cl. 204-181.00C.

BASF Wyandotte Corporation: *See*—
Boggs, Frank, Jr., 4,199,418, Cl. 204-99.000.
Newkirk, David D.; and Login, Robert B., 4,199,647, Cl. 428-394.000.
Schaaf, Robert L.; Kan, Peter T.; and Cenker, Moses, 4,199,524, Cl. 260-453.0SP.

Batruch, John R.: *See*—
Wheeler, Ronald H.; and Batruch, John R., 4,198,741, Cl. 29-566.300.

Battaglia, Charles J.; Secord, Denise S.; and Kim, Sang H., to Eastman Kodak Company. Halide ion-selective devices and method. 4,199,412, Cl. 204-1.00T.

Battelle Memorial Institute: *See*—
Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, 4,199,371, Cl. 127-37.000.

Battigelli, Jean A.: *See*—
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,199,338, Cl. 65-16.000.

Batts, John H.; and Garrison, Judd F., to John Thomas Batts, Inc. Tally for article displays. 4,198,773, Cl. 40-322.000.

Bauer, Adolf: *See*—
Weber, Karl-Heinz; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., 4,199,588, Cl. 424-267.000.

Baumgartner, Friedrich; Fernow, Karl H.; Waisnix, Franz; Weiss, Franz; and Zach, Werner, to Veitscher Magnesitwerke-Actien-Gesellschaft. Apparatus for building up and repairing a refractory lining. 4,199,108, Cl. 239-662.000.

Bausch & Lomb Incorporated: *See*—
Clark, James A., 4,198,980, Cl. 128-303.00R.

Baxter Travenol Laboratories, Inc.: *See*—
Becker, Lawrence F.; and Gajewski, Henry M., 4,198,983, Cl. 128-349.00R.
Camin, Lawrence R., 4,198,766, Cl. 35-17.000.
D'Amico, Richard L., 4,199,071, Cl. 215-256.000.
Heavner, Paul W.; Woessner, Roger J.; and Clifford, Susan E., 4,198,974, Cl. 128-215.000.
Johnston, William D.; Von Drasek, Richard J.; and Bull, Warren J., III, 4,199,062, Cl. 206-525.000.
Nauman, Mark R., 4,199,458, Cl. 210-321.00B.
Virag, Robert A., 4,198,969, Cl. 128-200.210.

Bayer Aktiengesellschaft: *See—*
Adelmann, Siegfried; Margotte, Dieter; and Nouvertne, Werner, 4,199,540, Cl. 264-22.000.
Fuchs, Rainer; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,199,596, Cl. 424-304.000.
Mues, Volker; Behrenz, Wolfgang; Rauleder, Gebhard; and Waldmann, Helmut, 4,199,593, Cl. 424-282.000.
Muhlemann, Hans R., 4,199,563, Cl. 424-49.000.
Schroder, Theo; and Metzger, Karl-Georg, 4,199,572, Cl. 424-180.000.
BBC Brown Boveri & Company Limited: *See—*
Meylan, Pierre, 4,199,301, Cl. 415-201.000.
Mizrah, Tiberiu, 4,199,379, Cl. 148-1.500.
Beck, Virgil R., to United States of America, Army. Double peaked amplifier. 4,199,730, Cl. 330-109.000.
Becker, Lawrence F.; and Gajewski, Henry M., to Baxter Travenol Laboratories, Inc. Catheter made of a thermoplastic material having improved softness and low friction. 4,198,983, Cl. 128-349.00R.
Becker, Wilfried: *See—*
Lipp, Herbert; and Becker, Wilfried, 4,198,897, Cl. 89-13.00R.
Becket, William C.: *See—*
Wahl, Richard E.; King, John E.; Becket, William C.; and Gannaway, Thomas W., 4,198,768, Cl. 35-29.00R.
Behrenz, Wolfgang: *See—*
Fuchs, Rainer; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,199,596, Cl. 424-304.000.
Mues, Volker; Behrenz, Wolfgang; Rauleder, Gebhard; and Waldmann, Helmut, 4,199,593, Cl. 424-282.000.
Bell Telephone Laboratories, Incorporated: *See—*
Agraz-Guerena, Jorge; and Fulton, Alan W., 4,199,775, Cl. 357-46.000.
Bethea, Clyde G.; Levine, Barry F.; Lynch, Robert T.; and Thurmond, Carl D., 4,199,698, Cl. 307-425.000.
Emrick, Arthur J.; and Maki, Arthur A., 4,199,665, Cl. 179-18.0AG.
Bendix Corporation, The: *See—*
Carp, Ralph W.; and Slack, John F., 4,198,934, Cl. 123-32.0EA.
Reddy, Junuthula N.; and Flagg, Gerald K., 4,198,932, Cl. 123-32.0EG.
Teitelbaum, Bernard R., 4,199,424, Cl. 204-195.00S.
Bennett, Alton W., to Burroughs Corporation. Compensated MOS timing network. 4,199,693, Cl. 307-246.000.
Bennett, Thomas M.: *See—*
Sze, Morgan C.; Bennett, Thomas M.; and Unger, Harold, 4,199,434, Cl. 208-40.000.
Benson, Herbert L., Jr., to Shell Oil Company. Activated bleaching process and compositions therefor. 4,199,466, Cl. 252-95.000.
Benson, Nuel C.: *See—*
McTaggart, James E.; and Benson, Nuel C., 4,199,736, Cl. 333-17.00L.
Benson, Sidney W., to University of Southern California. Conversion of methane. 4,199,533, Cl. 585-500.000.
Bent, John H., to Minnesota Mining and Manufacturing Company. Surgical drill chuck. 4,199,160, Cl. 279-30.000.
Beretta, Angelo V.; and Beretta, David, to Durastone Co. Apparatus for bending concrete curbing. 4,199,312, Cl. 425-383.000.
Beretta, David: *See—*
Beretta, Angelo V.; and Beretta, David, 4,199,312, Cl. 425-383.000.
Berg Equipment Corporation: *See—*
Wirsbinski, James L., 4,199,054, Cl. 198-735.000.
Bergman, Burton; and Lawrence, Brian P., to Boeing Company, The. Folding, plug type aircraft door. 4,199,120, Cl. 244-129.500.
Berkelhammer, Gerald; and Kameswaran, Venkataraman, to American Cyanamid Company. M-phenoxybenzyl and α-cyano-M-phenoxybenzyl esters of 2-haloalkyl (oxy-, thio-, sulfinyl-, or sulfonyl)-phenylalkanoic acids. 4,199,595, Cl. 424-304.000.
Berkhoel, James L., to Donaldson Company, Inc. Self-cleaning air filter. 4,199,334, Cl. 55-304.000.
Bernhard Forster, Firma: *See—*
Forster, Rolf, 4,198,753, Cl. 433-8.000.
Bert, Stephen F.: *See—*
Rieth, Kurt A.; and Bert, Stephen F., 4,198,732, Cl. 24-78.000.
Besser Industries, Inc.: *See—*
Salts, Thomas R., 4,199,287, Cl. 414-68.000.
Bethea, Clyde G.; Levine, Barry F.; Lynch, Robert T.; and Thurmond, Carl D., to Bell Telephone Laboratories, Incorporated. 2-Methyl-4-nitro-aniline nonlinear optical devices. 4,199,698, Cl. 307-425.000.
Bettcher Industries, Inc.: *See—*
Bettcher, Louis A., 4,198,750, Cl. 30-276.000.
Bettcher, Louis A., to Bettcher Industries, Inc. Ring blade knife having wear plate. 4,198,750, Cl. 30-276.000.
Betts, Woodrow W. Mobile artist cart. 4,199,171, Cl. 280-652.000.
BFG Glassgroup: *See—*
Mestre, Pierre; and Prevost, Henri, 4,199,342, Cl. 65-106.000.
Bharteey, Brij M.: *See—*
Shariff, Sadiq A.; Wilson, John R.; Bharteey, Brij M.; and Rowe, Neal E., 4,199,655, Cl. 174-72.00B.
Bhattacharya, Ashok K., to General Electric Company. Fill gas for miniature high pressure metal vapor arc lamp. 4,199,701, Cl. 313-25.000.
BICC Limited: *See—*
Slaughter, Raymond J.; and Chadwick, Derek, 4,199,225, Cl. 350-96.230.
Bielski, Benon H. J.: *See—*
Holroyd, Richard A.; and Bielski, Benon H. J., 4,199,419, Cl. 204-157.10R.
Bing, Valentijn B.; and Neis, Donald A., to Zenith Radio Corporation. Spring-loaded resistor terminal. 4,199,706, Cl. 313-481.000.
Bingham, Garrick R., to Green and Bingham Limited. Liquid spray jet assembly and a mineral mining machine cutting head incorporating such assembly. 4,199,107, Cl. 239-600.000.
Birjukov, Sergei B.; Gavrev, Valery S.; Goncharuk, Jury M.; Savitsky, Alexandr V.; and Lonchak, Viktor A., to Vsesojuzny Nauchno-Issledovatelsky Institut Po Razrabotke Nerazrushajuschikh Metodov I Sredstv Knotrolya Kachestva Materialov"VNIINK". Method and device for ultrasonic inspection of materials. 4,198,866, Cl. 73-613.000.
Birkhofer, Herbert; and Ersoy, Metin, to Schaeffer-Homberg GmbH. Machine for the attachment of rivets, buttons, or the like. 4,199,094, Cl. 227-37.000.
Biuro Projektow Przemyslu Cukrowniczego "Cukroprojekt": *See—*
Filipowicz, Mikolaj; and Filipowicz, Piotr, 4,199,459, Cl. 210-325.000.
Black Clawson Company, The: *See—*
Tetro, Richard S.; and Browning, Gerald F., 4,199,118, Cl. 242-75.440.
Blackburn, John B.: *See—*
Irvine, Alexander M.; and Blackburn, John B., 4,199,509, Cl. 260-314.500.
Blackwell, Jennings P.; and Tieszen, Dale O., to Phillips Petroleum Company. Basic dyeing of poly(arylene sulfide) resins. 4,199,321, Cl. 8-168.00R.
Blair, James E.; and Davis, Lois T., to Sybron Corporation. Process for decolorizing pulp and paper mill wastewater. 4,199,444, Cl. 210-11.000.
Bland, Bobby J. Propionic acid on a carrier material as a preservative. 4,199,606, Cl. 426-331.000.
Block and Company, Inc.: *See—*
Block, Mitchell L., 4,199,067, Cl. 211-13.000.
Block, Mitchell L., to Block and Company, Inc. Key rack. 4,199,067, Cl. 211-13.000.
Blore, James H., to Phillips Petroleum Company. Napped double knit fabric and method of making. 4,199,633, Cl. 428-91.000.
Blossey, Daniel F.; Deshpande, Narayan V.; Faucz, Eugene C.; Stange, Klaus K.; and Swackhamer, Stanley B., to Xerox Corporation. Random-dump storage buffer for moving web. 4,199,766, Cl. 346-74.100.
Blumenthal, John, to Gould Inc. Toning apparatus for electrostatic printing and plotting machines. 4,198,923, Cl. 118-660.000.
Blumke, Eugene G.: *See—*
White, Philip E.; and Blumke, Eugene G., 4,199,661, Cl. 370-91.000.
Blunck, Otto H. Zero-stable nondispersive gas analyzer. 4,199,683, Cl. 250-345.000.
Bobo, Melvin; and Stenger, Richard E., to General Electric Company. Central injection fuel carburetor. 4,198,815, Cl. 60-737.000.
Boehringer Ingelheim GmbH: *See—*
Weber, Karl-Heinz; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., 4,199,588, Cl. 424-267.000.
Boehringer Mannheim GmbH: *See—*
Wielinger, Hans; and Rittersdorf, Walter, 4,199,550, Cl. 422-58.000.
Boeing Company, The: *See—*
Bergman, Burton; and Lawrence, Brian P., 4,199,120, Cl. 244-129.500.
Corwin, Rudolph E.; and Riemer, Dietrich E., 4,199,377, Cl. 136-89.0SJ.
Herzog, Hans K., 4,199,663, Cl. 370-85.000.
Boell, Maurice: *See—*
Thiebaut, Albert J.; and Boell, Maurice, 4,199,673, Cl. 219-60.00A.
Boessler, Hans; Quis, Peter; Buechse, Joachim; and Rauch, Hubert, to Rohm GmbH. Plastisols comprising copolymers of methyl methacrylate. 4,199,486, Cl. 260-31.80M.
Boggs, Frank, Jr., to BASF Wyandotte Corporation. Mercury recovery system in electrolytic process. 4,199,418, Cl. 204-99.000.
Bohm, Horst: *See—*
Hirschel, Adolf; and Bohm, Horst, 4,199,018, Cl. 160-84.00R.
Bohmer, John O. Tandem wheel apparatus. 4,199,166, Cl. 280-96.100.
Bohnenberger, Ottmar G. Detachable aligning pin for die assembly. 4,199,313, Cl. 425-408.000.
Boldebuck, Edith M.: *See—*
Banucci, Eugene G.; and Boldebuck, Edith M., 4,199,651, Cl. 428-458.000.
Bom, Cornelis J. G.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,199,031, Cl. 172-59.000.
Bonar & Bemis, Ltd.: *See—*
Wilson, Lowell A., 4,198,800, Cl. 53-452.000.
Bonath, Bernt; Staubli, Sebastian; Horisberger, Hans; and Szekely, Istvan, to Ciba-Geigy AG. Process for the production of amino-l-acid. 4,199,529, Cl. 260-508.000.
Bootmakers of Sturgeon Bay, Inc., The: *See—*
Foster, Lloyd B., 4,198,771, Cl. 36-136.000.
Borba, Paul A. Combs for removing bot eggs and the like from hair. 4,198,928, Cl. 119-92.000.
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., to Sperry Corporation. Microprogrammable computer utilizing concurrently operating processors. 4,199,811, Cl. 364-200.000.
Borrows, Thomas G.: *See—*
Silver, Jules; and Borrows, Thomas G., 4,199,564, Cl. 424-80.000.
Borruso, Mariano. Electrodeposition of black deposit and electrolytes therefor. 4,199,417, Cl. 204-44.000.

Borselli, Massimo, to Moritz Madler GmbH & Co KG Koffer- und Lederwarenfabrik. Suspension device for fastening keys. 4,198,838, Cl. 70-456.00B.

Borst, Wolfgang: *See—*
Pagel, Ernst O.; and Borst, Wolfgang, 4,198,936, Cl. 123-117.00R.

Boski, Israel; Tunstall, Karl N.; and Warren, M. L., to Otis Engineering Corporation. Actuator module for wireline cutting safety valve. 4,199,131, Cl. 251-62.000.

Bouchard, John R., to Northrop Corporation. Process and apparatus for the removal of vaporized contaminants from closed gas system. 4,199,329, Cl. 55-17.000.

Boudreau, Archie E. Milking apparatus. 4,198,999, Cl. 137-205.000.

Boudreau, Jon P. Miniature camera probe. 4,199,238, Cl. 354-62.000.

Bourne, Nigel G., to Dowty Meco Limited. Power transmission. 4,198,819, Cl. 60-337.000.

Bowers, Kenneth E.; Merritt, Stephen E.; and Kinslow, William G., Jr., to Ethyl Development Corporation. Deflashing apparatus. 4,198,886, Cl. 83-112.000.

Boyd, Winnett. Brake actuator for bicycles and the like. 4,199,046, Cl. 192-5.000.

BP Chemicals Limited: *See—*
Randall, George C. W., 4,199,365, Cl. 106-84.000.

Bradbury, Stanley A., to Cable Supports Limited. Tools for injection moulding machines. 4,199,316, Cl. 425-577.000.

Brager, Gerhard: *See—*
Streck, Fritz; Paprotny, Peter; and Brager, Gerhard, 4,199,294, Cl. 414-739.000.

Bramow, Scott B.; Laakaniemi, Richard N.; and Wichman, Paul E., to Johnson Controls, Inc. Multiple load integrated fluid control units. 4,199,101, Cl. 236-13.000.

Brand, John R., to New Jersey Zinc Company, The. Weather resistant titanium dioxide pigment having improved optical properties and process for making same. 4,199,370, Cl. 106-300.000.

Brandle, Charles D., Jr.; and Hassell, John B., Jr., to Union Carbide Corporation. Method for producing single crystal gadolinium gallium garnet. 4,199,396, Cl. 156-617.0SP.

Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., to Givaudan Corporation; and Hoffmann-La Roche Inc. Preservation of aqueous systems with α-halo-β-aminocrotonic acid esters. 4,199,600, Cl. 424-314.000.

Braner Enterprises, Inc.: *See—*
Matsunaga, Douglas S., 4,199,116, Cl. 242-63.000.

Braun AG: *See—*
Fahrenschon, Kurt, 4,198,810, Cl. 368-239.000.

Breed Corporation: *See—*
Breed, David S., 4,198,864, Cl. 73-492.000.

Breed, David S., to Breed Corporation. Velocity change sensor and recorder. 4,198,864, Cl. 73-492.000.

Brendl, Rudolf; Finkenzeller, Johann; Kirsch, Harry; and Weiss, Karl, to Siemens Aktiengesellschaft. Sheet film changer. 4,199,687, Cl. 250-468.000.

Breuer, Oswald: *See—*
Steinkuhl, Bernd; and Breuer, Oswald, 4,199,194, Cl. 299-34.000.

Bright, Robert H., to Koppers Company, Inc. Wet sealed standpipe cap. 4,199,008, Cl. 137-800.000.

Briner, Emil: *See—*
Ferri, Johann W.; Steinmetz, Werner; Briner, Emil; and Fritschi, Bruno, 4,199,333, Cl. 55-290.000.

Brinly-Hardy Co., Inc.: *See—*
Doering, Charles W., 4,199,015, Cl. 144-193.00A.

British Steel Corporation: *See—*
Wood, Jonathan R.; Pickin, George A.; and Harvey, David S., 4,199,349, Cl. 75-29.000.

Brock, Robert: *See—*
Zulch, Donald I.; and Brock, Robert, 4,199,759, Cl. 343-6.00R.

Brois, Stanley: *See—*
Ryer, Jack; Brois, Stanley; and Winans, Esther D., 4,199,463, Cl. 252-51.50A.

Brolo, Luigi A. Device for applying sheet material, such as labels and the like, to a backing surface by means of transparent adhesive tape. 4,199,395, Cl. 156-510.000.

Bross, Erhard: *See—*
Haupt, Gunter; Fischer, Franz; Handtmann, Arthur; and Bross, Erhard, 4,198,707, Cl. 2-2.500.

Bross, Kenneth L., to Roper Corporation. Chain saw having anti-vibration features. 4,198,752, Cl. 30-381.000.

Brown, Jack: *See—*
Odermann, Charles R.; and Brown, Jack, 4,199,712, Cl. 318-345.00E.

Brown, Jerry A. Cup dispenser. 4,199,076, Cl. 221-45.000.

Brown, Robert L.; Dunaway, Kenneth W.; and Henley, Virgil E., to General Tire & Rubber Company, The. Apparatus for forming the bead and sidewall portions of a pneumatic tire and apparatus and method of making the same. 4,199,393, Cl. 156-401.000.

Browning, Gerald F.: *See—*
Tetro, Richard S.; and Browning, Gerald F., 4,199,118, Cl. 242-75.440.

Brumlik, George C. Self-gripping devices with flexible self-gripping means and method. 4,198,734, Cl. 24-204.000.

Brunelli, Maurizio: *See—*
Prevedello, Aldo; and Brunelli, Maurizio, 4,199,516, Cl. 260-346.110.

Brunsting, Albert; and Hogg, Walter R., to Coulter Electronics, Inc. Dark field illuminator and collector apparatus and method. 4,199,686, Cl. 250-459.000.

Brynko, Carl: *See—*
Weigl, John W.; and Brynko, Carl, 4,199,359, Cl. 430-308.000.

Budinger, William D.; Keen, James L.; and Kellner, Joseph D., to Rodel, Inc. Printing roller with polymeric coner and method of making the same. 4,198,739, Cl. 29-132.000.

Budzich, Tadeusz. Load responsive control valve. 4,199,005, Cl. 137-596.130.

Buechse, Joachim: *See—*
Boessler, Hans; Quis, Peter; Buechse, Joachim; and Rauch, Hubert, 4,199,486, Cl. 260-31.80M.

Buehring, Willi J.: *See—*
Oloff, Clarence M.; Buehring, Willi J.; and Greenlees, Kevin J., 4,199,079, Cl. 222-1.000.

Buhrer, Erwin. Pattern device for foundry molds. 4,199,020, Cl. 164-146.000.

Bukosky, Allen A.; and Frey, LaVerne L. Digitally tunable integrated circuit pulse generator and tuning system. 4,199,726, Cl. 328-14.000.

Bull, Warren J., III: *See—*
Johnston, William D.; Von Drasek, Richard J.; and Bull, Warren J., III, 4,199,062, Cl. 206-525.000.

Bullard Company, The: *See—*
Grinage, Claude M., 4,198,885, Cl. 82-24.00R.

Bunker Ramo Corporation: *See—*
DeRoss, Robert W., 4,199,654, Cl. 174-52.0FP.

Burchall, Malcolm A.: *See—*
Crowe, John E.; Leach, John M.; and Burchall, Malcolm A., 4,199,807, Cl. 363-132.000.

Burke, Edward F., Jr.: *See—*
Dunn, David S.; Gifford, R. Bruce; and Burke, Edward F., Jr., 4,198,871, Cl. 74-37.000.

Burroughs Corporation: *See—*
Bennett, Alton W., 4,199,693, Cl. 307-246.000.

Burroughs Wellcome Co.: *See—*
Schaeffer, Howard J., 4,199,574, Cl. 424-200.000.

Burton, Lawrence; and Friedman, Frank, to Immunology Research Foundation, Inc. Prol A fraction recovery method and product. 4,199,497, Cl. 260-112.00B.

Burton, Parsons & Company, Inc.: *See—*
Rankin, Billy F., 4,199,567, Cl. 424-173.000.

Burwell, Blair T.: *See—*
Laferty, John M.; Johnson, James L.; and Burwell, Blair T., 4,199,551, Cl. 423-6.000.

Burwell, Clyde E.: *See—*
Dill, George D.; Tomozawa, Atsushi; Fillion, James R.; Ali, Mian Z.; Burwell, Clyde E.; Warner, Brady H., Jr.; and Jones, Richard W., 4,199,660, Cl. 370-50.000.

Bush, James H.; and Martin, Samuel A., to Holland Hitch Company. Fifth wheel suspension. 4,199,168, Cl. 280-439.000.

Butler Manufacturing Company: *See—*
Keser, Paul D.; and McAlister, Gerald E., 4,199,674, Cl. 219-124.340.

Button, Harold O.; McCall, Thomas F.; and Meyer, Donald W., to C. W. Nofsinger Company, The. Solvent dehydration system. 4,199,433, Cl. 208-31.000.

Butts, William R.: *See—*
Linko, Peter J., III; Butts, William R.; Awalt, Susan L.; and Glynn, Charles E., 4,198,839, Cl. 72-199.000.

C. J. Edwards Company: *See—*
Baldyga, Joseph W., 4,199,212, Cl. 339-107.000.

C.M.T. Tool: *See—*
Lewis, John B., 4,198,748, Cl. 30-180.000.

C. P. Clare and Company: *See—*
Deith, John, 4,199,739, Cl. 335-58.000.

C. van der Lely N. V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,199,031, Cl. 172-59.000.

C. W. Nofsinger Company, The: *See—*
Button, Harold O.; McCall, Thomas F.; and Meyer, Donald W., 4,199,433, Cl. 208-31.000.

Cable Supports Limited: *See—*
Bradbury, Stanley A., 4,199,316, Cl. 425-577.000.

Cage, John M.; Shaw, Robert F.; and Stoft, Paul E., to Shaw, Robert F. Method of using an electrically heated surgical cutting instrument. 4,198,957, Cl. 128-1.00R.

Cain, Clarence P.; and Michie, David D. Measuring system including elements implantable beneath the skin. 4,198,987, Cl. 128-663.000.

Caines, Ronald S., to Dow Chemical Company, The. Vermicular expanded graphite composite material. 4,199,628, Cl. 428-36.000.

Calhoun, Charles W.: *See—*
Weiner, Peter D.; and Calhoun, Charles W., 4,199,032, Cl. 173-12.000.

Calnetics Corporation: *See—*
Hornak, Michael A.; and Edward, Fred E., 4,198,879, Cl. 74-579.00E.

Cambre, Cushman M., to Procter & Gamble Company, The. Laundry detergent substrate articles. 4,199,464, Cl. 252-91.000.

Cambridge Filter Corporation: *See—*
Hladik, Stephen M., 4,199,387, Cl. 156-160.000.

Camin, Lawrence R., to Baxter Travenol Laboratories, Inc. Intravenous training/demonstration aid. 4,198,766, Cl. 35-17.000.

Campbell, Alan S.; and Jennings, Jack H., to International Business Machines Corporation. Nozzle valve for ink jet printers. 4,199,767, Cl. 346-75.000.

Campbell, Carl D., to Garrett Corporation, The. Fluid conditioning apparatus and system. 4,198,830, Cl. 62-87.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Topping, John A.; and Mayer, Peter, 4,199,340, Cl. 65-32.000.
Canadian Industries Limited: *See—*
Cribb, William E.; and Roach, Robert J., 4,199,262, Cl. 366-44.000.
Canadian Sun Systems Ltd.: *See—*
Dorbeck, Leo R., 4,198,955, Cl. 126-439.000.
Canon Kabushiki Kaisha: *See—*
Matsuda, Mutsuhide; Tamura, Shuichi; and Tamamura, Hideo, 4,199,235, Cl. 354-25.000.
Suzki, Akiyoshi; and Hirabayashi, Yoichi, 4,199,219, Cl. 350-6.100.
Uchiyama, Takashi; Suzuki, Ryoichi; Ito, Fumio; Nagasaka, Wataru; Okuno, Youichi; and Matsuda, Mutsuhide, 4,199,239, Cl. 354-86.000.
Canron Inc.: *See—*
Miller, Kirk D.; Flood, John B.; Dimou, George; Kara, Frederick E.; and Amos, Richard W., 4,199,353, Cl. 75-130.00R.
Capaul, Marcel: *See—*
Schaefer, Peter; Capaul, Marcel; Griehl, Wolfgang; and Meier, Peter, 4,199,366, Cl. 106-90.000.
Carbonell, Jose; Hasler, Rolf; and Walliser, Roland, to Sandoz Ltd. Apparatus useful in exhaust dyeing. 4,199,813, Cl. 364-469.000.
Cardinal Surveys Company: *See—*
Moon, Keith E., 4,199,680, Cl. 250-260.000.
Carice International Products, Ltd.: *See—*
Mung-Kuen Luk, Catherine, 4,198,861, Cl. 73-356.000.
Carl Zeiss Stiftung: *See—*
Schwarz, Gerhard, 4,199,247, Cl. 354-274.000.
Carle, Jacques, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Cryopumps. 4,198,829, Cl. 62-55.500.
Carlisle, Thomas P.; and Dokken, Rodney D., to Hughes Aircraft Company. Multipactor switch. 4,199,738, Cl. 333-258.000.
Carlos, Donald D., to Ashland Oil, Inc. Oxidation of petrolatums in the presence of halide salts. 4,199,431, Cl. 208-3.000.
Carlsen, Poul E. K.: *See—*
Nielsen, Knud H.; and Carlsen, Poul E. K., 4,198,840, Cl. 72-217.000.
Carolon Company: *See—*
Reid, Lawrence G., Sr., 4,198,834, Cl. 66-172.00E.
Carp, Ralph W.; and Slack, John F., to Bendix Corporation, The. Signal amplification means. 4,198,934, Cl. 123-32.0EA.
Carpenter, Neil L., to Electroflood Company. Method and apparatus for tertiary recovery of oil. 4,199,025, Cl. 166-248.000.
Carpenter, Raymond J., to Innovative Medical Systems, Corp. Slope detector. 4,199,728, Cl. 328-114.000.
Casagrande, John T. Lens system with reticle and diffuser glass. 4,199,220, Cl. 350-78.000.
Case, Derek F.: *See—*
Ridgway, Peter C.; and Case, Derek F., 4,199,382, Cl. 148-120.000.
Cash, Wilbur H., Jr.: *See—*
United States of America, National Aeronautics and Space Administration; Cash, Wilbur H., Jr.; and Polhemus, John T., 4,198,988, Cl. 128-666.000.
Casteel, Joseph M. Conveyor and tray for luggage. 4,199,053, Cl. 198-523.000.
Caterpillar Mitsubishi Ltd.: *See—*
Wada, Hideo; and Morita, Izuru, 4,199,004, Cl. 137-493.000.
Caterpillar Tractor Co.: *See—*
Grob, Russel W., 4,199,719, Cl. 324-166.000.
Krohn, Dennis G.; and Wellauer, John C., 4,199,332, Cl. 55-191.000.
Peterson, Wayne A., 4,199,293, Cl. 414-699.000.
Catterfeld, Fritz C., to Rockwell International Corporation. Hydrostatic seal for centrifugal pumps. 4,199,152, Cl. 277-3.000.
Caughey, Charles A., to Conoco, Inc. Enhanced recovery with geopressured water resource. 4,199,028, Cl. 166-314.000.
CBS Inc.: *See—*
Weber, Christopher M., 4,198,891, Cl. 84-1.030.
Ceeco: *See—*
Lischin, Alan J., 4,199,659, Cl. 179-6.30R.
Cel-Cor Industries, Inc.: *See—*
McGrath, Spencer C., 4,198,799, Cl. 53-121.000.
Cenker, Moses: *See—*
Schaaf, Robert L.; Kan, Peter T.; and Cenker, Moses, 4,199,524, Cl. 260-453.0SP.
Central Dynamics Ltd.: *See—*
Greenfield, Raymond L.; and Lauderdale, John G., 4,199,790, Cl. 358-22.000.
Centre Electronique Horloger SA: *See—*
Piguet, Christian, 4,199,751, Cl. 340-365.00S.
Chabala, John C.; and Fisher, Michael H., to Merck & Co., Inc. Selective hydrogenation products of C-076 compounds and derivatives thereof. 4,199,569, Cl. 424-180.000.
Chadwick, Curt H.; and Reed, Edward D., to GTE Sylvania Incorporated. Optical compensation for thermal lensing in conductively cooled laser rod. 4,199,735, Cl. 331-94.50P.
Chadwick, Derek: *See—*
Slaughter, Raymond J.; and Chadwick, Derek, 4,199,225, Cl. 350-96.230.
Chambers, David B.; and Walker, Barry, to Imperial Chemical Industries Limited. Coalescence of oil in oil/water emulsions. 4,199,447, Cl. 210-23.00R.
Chambley, Phillip W.; and Norris, Alan H., to WWG Industries Inc. Method for forming temporary fabrics. 4,198,735, Cl. 28-218.000.
Champion International Corporation: *See—*
Dutcher, Daniel P., 4,199,063, Cl. 206-626.000.
Golden, Ronald, 4,199,618, Cl. 427-145.000.
Chan, Patrick S.: *See—*
Sanderson, Robert A.; and Chan, Patrick S., 4,199,265, Cl. 366-274.000.
Chance, John H., to Martin Concrete Engineering Company. Method and apparatus for farming row crops. 4,199,030, Cl. 172-1.000.
Chapman, Paul W., to Sanders Associates, Inc. Aquaculture rearing system. 4,198,924, Cl. 119-2.000.
Charm, Richard W.: *See—*
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,199,623, Cl. 427-305.000.
Cheale, Daniel; Randall, Bryce E.; and Martin, Eric T., to Howard Machinery Limited. Baling machine. 4,198,904, Cl. 100-45.000.
Cheesman, William D., to Royce Equipment Company. Apparatus for a screen assembly for removing solids from fluids. 4,199,456, Cl. 210-232.000.
Chemplex Company: *See—*
Kirch, William, 4,199,546, Cl. 422-132.000.
Chen, Tsang J., to Eastman Kodak Company. Processes for achieving uniform, efficient distribution of hydrophobic materials through hydrophilic colloid layers and loaded latex compositions. 4,199,363, Cl. 430-512.000.
Cheon, Yong-Duek. Design and method of fabricating same. 4,199,631, Cl. 428-14.000.
Cherian, Gabriel B.; Scheingold, William S.; and Zimmerman, Richard H., to AMP Incorporated. Electrical interconnecting device. 4,199,209, Cl. 339-59.00M.
Cherkofsky, Saul C., to Du Pont de Nemours, E. I., and Company. Antiinflammatory 4,5-diaryl-2-nitroimidazoles. 4,199,592, Cl. 424-273.00R.
Chessmore, Donald O.; and Rudy, Charles E., Jr., to Chevron Research Company. NO_x Control in cracking catalyst regeneration. 4,199,435, Cl. 208-113.000.
Chevron Research Company: *See—*
Chessmore, Donald O.; and Rudy, Charles E., Jr., 4,199,435, Cl. 208-113.000.
Olund, Sven A., 4,199,461, Cl. 252-49.800.
Tamm, Paul W.; and Langlois, Gordon E., 4,199,432, Cl. 208-8.00R.
Wilkes, John B., 4,199,479, Cl. 252-457.000.
Chiang, Robert; and Perry, Eli, to Monsanto Company. Process for separating aqueous mineral acid mixtures. 4,199,445, Cl. 210-23.00R.
Chimicasa GmbH: *See—*
Dwivedi, Basant K.; and Raniwala, Subodh K., 4,199,373, Cl. 127-60.000.
Dwivedi, Basant K.; and Raniwala, Subodh K., 4,199,374, Cl. 127-60.000.
Chiu, Thomas T.: *See—*
Roth, Harold H.; Owen, Peter W.; and Chiu, Thomas T., 4,199,561, Cl. 424-32.000.
Christensen, Warren W.: *See—*
United States of America, National Aeronautics and Space Administration; Christensen, Warren W.; Mayer, Ludwig A.; and Woeller, Fritz H., 4,198,792, Cl. 521-55.000.
Christensson, Od W., to Esseltepac Aktiebolag. Blank for cup-shaped container of cardboard or the like. 4,199,097, Cl. 229-31.00R.
Christie, Eugene P. Support rack for polyethylene bag. 4,199,122, Cl. 248-97.000.
Chromie, Edsel. Solar powered engine and tracking system. 4,198,826, Cl. 60-641.000.
Chung, Hong P. Nipper type record cleaner. 4,199,150, Cl. 274-47.000.
Ciba-Geigy AG: *See—*
Bonath, Bernt; Staubli, Sebastian; Horisberger, Hans; and Szekely, Istvan, 4,199,529, Cl. 260-508.000.
Ciba-Geigy Corporation: *See—*
Irvine, Alexander M.; and Blackburn, John B., 4,199,509, Cl. 260-314.500.
Moser, Paul; and Rody, Jean, 4,199,494, Cl. 260-45.75N.
Ciemochowski, Michael F., to Colt Industries Operating Corp. Electronic speed governor. 4,199,039, Cl. 180-177.000.
Cincinnati Milacron Inc.: *See—*
Gruber, Paul, 4,198,790, Cl. 51-289.00R.
Citizen Watch Co., Ltd.: *See—*
Kume, Kazunari; Watanabe, Minoru; Ohno, Hideshi; Tamaru, Munetaka; Machida, Takayasu; Nakamura, Seiichi; and Morokawa, Shigeru, 4,199,699, Cl. 310-49.00R.
Miyasaka, Kenzi; Namiki, Ryo; and Takahashi, Kotaro, 4,198,809, Cl. 368-80.000.
Tamaru, Munetaka, 4,198,808, Cl. 368-37.000.
Clark, James A., to Bausch & Lomb Incorporated. Intraocular lens inserting tool. 4,198,980, Cl. 128-303.00R.
Clark, William H. Insulation. 4,199,636, Cl. 428-114.000.
Claxton, Gerald L., to Up-Right, Inc. Harvesting of trellis-supported grapevines. 4,198,801, Cl. 56-1.000.
Clayton, Donald D. Bowling glove. 4,198,709, Cl. 2-161.00A.
Clifford, Susan E.: *See—*
Heavner, Paul W.; Woessner, Roger J.; and Clifford, Susan E., 4,198,974, Cl. 128-215.000.
Clough, George F. G., to Imperial Chemical Industries Limited. Oil/water separation process and apparatus. 4,199,446, Cl. 210-23.00R.
Coachmen Industries, Inc.: *See—*
Curry, Miles K., 4,199,179, Cl. 292-338.000.
Coats, Richard A. Door latch. 4,199,178, Cl. 292-205.000.

Coffen, David L.: *See—*
Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., 4,199,600, Cl. 424-314.000.
Cohen, Max. Process for shucking a mollusk. 4,198,728, Cl. 17-48.000.
Cohn, Seymour B.: *See—*
United States of America, National Aeronautics and Space Administration; Williams, William F.; and Cohn, Seymour B., 4,199,764, Cl. 343-786.000.
Coin Acceptors, Inc.: *See—*
Vogt, Carl L., 4,199,669, Cl. 200-52.00R.
Cole, Edward L.; Estes, John H.; and Suggitt, Robert M., to Texaco Inc. Process for producing methane from naphtha. 4,199,328, Cl. 48-213.000.
Colgate-Palmolive Company: *See—*
Renaud, Jean; and Monique, Seugnet, 4,199,482, Cl. 252-559.000.
Collins, Carter C.: *See—*
Tidd, Leon E.; Scott, Alan B.; Madey, Julius M. J.; and Collins, Carter C., 4,199,261, Cl. 356-448.000.
Collins, Royal D.: *See—*
Barford, Brian D.; Gilbert, Lawrence A.; Staab, Robert A.; Collins, Royal D.; and Ries, Charles R., 4,199,468, Cl. 252-103.000.
Colt Industries Operating Corp.: *See—*
Ciemochowski, Michael F., 4,199,039, Cl. 180-177.000.
Combette, Marc; and Ollivier, Jean, to Societe de Prospection et d'Inventions Techniques S.P.I.T. Self-closing propellant charge package. 4,199,093, Cl. 227-9.000.
Combustion Engineering, Inc.: *See—*
Mordarski, Walter J.; and Zegler, Sylvester T., 4,199,404, Cl. 176-66.000.
Puri, Arun; and Mullooly, John F., 4,199,403, Cl. 176-61.000.
Commette, Denis S.: *See—*
Gusmer, Frederick E.; Commette, Denis S.; and Bairunas, Robert A., 4,199,303, Cl. 417-216.000.
Commissariat a l'Energie Atomique: *See—*
Alirot, Jean-Louis; and Le Gardeur, Rene, 4,199,709, Cl. 315-4.000.
Destannes, Louis; Duchene, Jacques; and Meyer, Robert, 4,199,228, Cl. 350-320.000.
Forestier, Jean; Leblanc, Bernard; Monteil, Marcel; and Monteil, Pierre, 4,198,929, Cl. 122-32.000.
Communications Satellite Corporation: *See—*
Dill, George D.; Tomozawa, Atsushi; Fillion, James R.; Ali, Mian Z.; Burwell, Clyde E.; Warner, Brady H., Jr.; and Jones, Richard W., 4,199,660, Cl. 370-50.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Durand, Jean-Michel; and Penicaud, Etienne, 4,199,729, Cl. 328-151.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Yvard, Marcel, 4,199,789, Cl. 358-294.000.
Compur-Electronic Gesellschaft mit beschrankter Haftung: *See—*
Muhlbock, Franz; Karpaty, Akos; and Pross, Wilhelm, 4,199,544, Cl. 422-72.000.
Condec Corporation: *See—*
Phipps, Arthur L., 4,199,310, Cl. 425-71.000.
Condit, Paul B.: *See—*
Hinshaw, Jerald C.; and Condit, Paul B., 4,199,354, Cl. 430-226.000.
Hinshaw, Jerald C.; and Condit, Paul B., 4,199,355, Cl. 430-226.000.
Conkling, Charles T.; and Scarl, Donald B., to Conkling Laboratories. Digital averager. 4,199,817, Cl. 364-734.000.
Conkling Laboratories: *See—*
Conkling, Charles T.; and Scarl, Donald B., 4,199,817, Cl. 364-734.000.
Conley, Frank: *See—*
Ganz, Robert H.; and Conley, Frank, 4,199,288, Cl. 414-128.000.
Connor, Ralph F., to Whirlpool Corporation. Circular cavity discharge valve. 4,199,309, Cl. 418-270.000.
Conoco, Inc.: *See—*
Caughey, Charles A., 4,199,028, Cl. 166-314.000.
Conrad, Robert A.; and Gerzon, Koert, to Eli Lilly and Company. Bridged cathranthus alkaloid dimers. 4,199,504, Cl. 260-244.400.
Conrad, Ulrich; and Niemeier, Gerd, to Daimler-Benz Aktiengesellschaft. Installation for the metered lubrication of an injection pump flangedly connected to an internal combustion engine. 4,198,948, Cl. 123-196.00R.
Consiglio, Luciano, to S.I.P. Societa' Italiana per l'Esercizio Telefonico P.A. Continuous paper strip or the like to form invoices and the like transformable into closed covers. 4,199,630, Cl. 428-43.000.
Contraves Goerz Corporation: *See—*
Weit, James G., 4,199,800, Cl. 361-239.000.
Control Data Corporation: *See—*
White, Philip E.; and Blumke, Eugene G., 4,199,661, Cl. 370-91.000.
Cook, Julian L. Slingshot with adjustable sight. 4,198,949, Cl. 124-20.00R.
Cook, Peter W.; and Schuster, Stanley E., to International Business Machines Corporation. Avoidance of hot electron operation of voltage stressed bootstrap drivers. 4,199,695, Cl. 307-269.000.
Cook, Richard F.: *See—*
Whyte, Ian A.; and Cook, Richard F., 4,199,761, Cl. 340-695.000.
Cooke, Ralph C.; and Wilkerson, James D., Jr., to General Electric Company. Refrigerator cabinet construction. 4,199,205, Cl. 312-214.000.
Cooney Catheter Corporation: *See—*
Cooney, Patricia A.; and Cooney, Donald G., 4,198,979, Cl. 128-295.000.
Cooney, Donald G.: *See—*
Cooney, Patricia A.; and Cooney, Donald G., 4,198,979, Cl. 128-295.000.
Cooney, Patricia A.; and Cooney, Donald G., to Cooney Catheter Corporation. Urine collector for women. 4,198,979, Cl. 128-295.000.
Cooper, John L.; and Newnam, James A., to Du Pont de Nemours, E. I., and Company. Low flame-response polyester fiberfill blends. 4,199,642, Cl. 428-288.000.
Copeland, William M., to Servicemaster Industries, Inc. Combination motor and auxiliary mechanism actuator. 4,198,721, Cl. 15-50.00R.
Cordis Corporation: *See—*
Harris, Donald L., 4,198,991, Cl. 128-784.000.
Corey, Lawrence G., to UMC Electronics Co. Automatic recording system. 4,199,791, Cl. 360-69.000.
Corning Glass Works: *See—*
Eolin, Robert W.; Foster, Gordon F.; Mach, Joseph F.; and Maschmeyer, Richard O., 4,199,343, Cl. 65-157.000.
Rittler, Hermann L., 4,199,336, Cl. 65-2.000.
Wu, Shy-Hsien, 4,199,538, Cl. 264-1.000.
Corrugated Paper Corporation: *See—*
Lopez, Louis R., 4,199,098, Cl. 229-41.00C.
Corwin, Rudolph E.; and Riemer, Dietrich E., to Boeing Company, The. Solar cell. 4,199,377, Cl. 136-89.0SJ.
Cosby, Lowell A.; Fiato, Rocco A.; and Vidal, Jose L., to Union Carbide Corporation. Rhodium carbonyl sulfur cluster compounds. 4,199,520, Cl. 260-429.00R.
Cosentino, Louis S.: *See—*
Anderson, Charles H.; and Cosentino, Louis S., 4,199,705, Cl. 313-422.000.
Cosyns, Jean: *See—*
Courty, Philippe; Le Page, Jean-Francois; Sugier, Andre; and Cosyns, Jean, 4,199,437, Cl. 208-124.000.
Cottigny, Cyrille M., deceased: *See—*
Liu, Thomas J.; and Cottigny, Cyrille M., deceased, 4,199,401, Cl. 162-358.000.
Cottigny, Gisele B., executrix: *See—*
Liu, Thomas J.; and Cottigny, Cyrille M., deceased, 4,199,401, Cl. 162-358.000.
Coulter Electronics, Inc.: *See—*
Brunsting, Albert; and Hogg, Walter R., 4,199,686, Cl. 250-459.000.
Courty, Philippe, to Institut Francais du Petrole. Process for steam-dealkylating alkylaromatic hydrocarbons. 4,199,436, Cl. 208-124.000.
Courty, Philippe; Le Page, Jean-Francois; Sugier, Andre; and Cosyns, Jean, to Institut Francais du Petrole. Process for steam dealkylation of aromatic hydrocarbons. 4,199,437, Cl. 208-124.000.
Cox, John M.; and Shephard, Margaret C., to Imperial Chemical Industries Limited. Pesticidal active furo[2,3-d] pyrimidine derivatives, compositions containing the same and use thereof. 4,199,584, Cl. 424-251.000.
Cox, Terence; and Hancock, Roger I., to Imperial Chemical Industries Limited. Oil recovery process. 4,199,027, Cl. 166-274.000.
CPC International Inc.: *See—*
Walon, Raoul G. P., 4,199,372, Cl. 127-40.000.
Craft, Jack, to RCA Corporation. Intercarrier sound system. 4,199,787, Cl. 358-197.000.
Craig, Roderick I.: *See—*
Kyte, Derek J.; Hansen, Walter I.; and Craig, Roderick I., 4,199,815, Cl. 364-523.000.
Crain, Ronald W.: *See—*
Strikis, Guntis V.; Halacka, Michael F.; and Crain, Ronald W., 4,199,304, Cl. 417-310.000.
Cranstoun, David: *See—*
Pratt, Harry H.; and Cranstoun, David, 4,198,930, Cl. 122-235.00C.
Cribb, William E.; and Roach, Robert J., to Canadian Industries Limited. Bulk explosive mixing and delivery apparatus. 4,199,262, Cl. 366-44.000.
Crowe, John E.; Leach, John M.; and Burchall, Malcolm A., to Gould Advance Limited. Regulated power supply apparatus. 4,199,807, Cl. 363-132.000.
Crowther, Gerald H.: *See—*
Washington, James M.; Crowther, Gerald H.; and Gaudlitz, Robert T., 4,198,854, Cl. 73-38.000.
Cruzan, Charles T.: *See—*
Cruzan, Harold; and Cruzan, Charles T., 4,198,777, Cl. 43-57.50A.
Cruzan, Harold; and Cruzan, Charles T. Fishing tackle box. 4,198,777, Cl. 43-57.50A.
Culp, Donald R.: *See—*
Tarpley, William B., Jr.; and Culp, Donald R., 4,198,865, Cl. 73-582.000.
Cummings, Forest M.; and Sellmeyer, Jack S., to Rockwell International Corporation. Automatic modulation control apparatus. 4,199,723, Cl. 455-108.000.
Curry, Herbert L.; and Hall, Walter L., to General Electric Company. Polycarbonate article coated with a photocured coating. 4,199,648, Cl. 428-409.000.
Curry, Miles K., to Coachmen Industries, Inc. Spring biased prop for a pivoted member hinged to a support member. 4,199,179, Cl. 292-338.000.
Cushman, David W.: *See—*
Ondetti, Miguel A.; and Cushman, David W., 4,199,512, Cl. 260-326.12R.
Custom Concepts, Incorporated: *See—*
Kubiatowicz, James F., 4,198,780, Cl. 46-92.000.
Daimler-Benz Aktiengesellschaft: *See—*
Conrad, Ulrich; and Niemeier, Gerd, 4,198,948, Cl. 123-196.00R.
Forster, Hans-Joachim M., 4,199,713, Cl. 322-2.00R.
Pickard, Jurgen, 4,198,818, Cl. 60-330.000.
D'Amico, Richard L., to Baxter Travenol Laboratories, Inc. Closure with improved pull tab. 4,199,071, Cl. 215-256.000.

Damron, Earl M.; and Lipps, Jack I., to Acme Machinery Company. Underground mining machine having temporary roof support means and roof bolting means associated therewith. 4,199,193, Cl. 299-31.000.

Dancsi, Lajos: *See—*
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, 4,199,505, Cl. 260-244.400.

Daniels, Phillip D., to Novi Plastics Company. Shower cabinet and base. 4,198,715, Cl. 4-146.000.

Danilin, Jury I.; Maringulov, Konstantin A.; and Pavlov, Evgeny N. Electrical connection matrix plane. 4,199,818, Cl. 365-70.000.

Danna, Gary F.; Vigo, Tyrone L.; and Welch, Clark M., to United States of America, Agriculture. Antibacterial textile finishes utilizing zinc acetate and hydrogen peroxide. 4,199,322, Cl. 8-186.000.

Danneberg, Peter: *See—*
Weber, Karl-Heinz; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., 4,199,588, Cl. 424-267.000.

Danzer, Robert. Locking mechanism. 4,199,177, Cl. 292-144.000.

Data Recording Instrument Company Limited: *See—*
Ridgway, Peter C.; and Case, Derek F., 4,199,382, Cl. 148-120.000.

Dato, Robert A. Method of playing a psychotherapeutic game. 4,199,146, Cl. 273-249.000.

Dau, Gary J., to Electric Power Research Institute, Inc. Distance measuring device and method. 4,199,258, Cl. 356-378.000.

Daugherty, Roger H.; Jones, Warren W.; and Swensrud, Roger L., to Westinghouse Electric Corp. Phase lead for connecting stator coils and parallel phase rings. 4,199,700, Cl. 310-71.000.

Daumer, Rolf: *See—*
Klotzner, Winfried; Daumer, Rolf; Zechnall, Martin; Kiencke, Uwe; and Flaig, Ulrich, 4,199,812, Cl. 364-431.000.

Davis, Howard S. Straight line telephone dialer. 4,199,666, Cl. 179-90.00R.

Davis, Lois T.: *See—*
Blair, James E.; and Davis, Lois T., 4,199,444, Cl. 210-11.000.

Day, Allon C.; and Hogan, John G., to Head Wrightson & Company Limited. Sealing means for rotary vessels. 4,199,155, Cl. 277-88.000.

Day, Jack R.: *See—*
Edwards, Charlene C.; and Day, Jack R., 4,199,620, Cl. 427-156.000.

de Chair, Rory S. Gas turbine engines. 4,199,296, Cl. 415-181.000.

Decombe, Robert: *See—*
Serex, Charles; and Decombe, Robert, 4,199,317, Cl. 8-2.50A.

Deeb, Fouad M.: *See—*
Skinner, Harry W.; and Deeb, Fouad M., 4,199,157, Cl. 277-190.000.

Deere & Company: *See—*
Hengen, Edward J.; and Wilson, John E., 4,198,802, Cl. 56-14.600.

deFries, Jan R.: *See—*
Stoll, Kurt; and deFries, Jan R., 4,199,130, Cl. 251-29.000.

Deith, John, to C. P. Clare and Company. Liquid wetted switching element. 4,199,739, Cl. 335-58.000.

De Jong, Feike; and Reinhoudt, David N., to Shell Oil Company. Macrocyclic polyether complexes. 4,199,513, Cl. 260-338.000.

Della-Porta, Clifford A.; and Spenlove-Spenlove, Peter J. F. B., to Premier Drum Company Limited, The. Bass drum pedal. 4,198,894, Cl. 84-422.00R.

DeMaeo, Anthony J.: *See—*
Mahnke, Parker E.; and DeMaeo, Anthony J., 4,199,139, Cl. 272-118.000.

Demandt, Kim: *See—*
Leunbach, Ib; Demandt, Kim; and Skilbreid, Ottar, 4,199,684, Cl. 250-402.000.

deMey, Charles F., II, to Perkin-Elmer Corporation, The. High-pressure remote-controlled valve. 4,199,132, Cl. 251-134.000.

de Munck, Eduard H. L., to Vredestein N.V. Profiled gasket for sealing tunnel segment joints. 4,199,158, Cl. 277-205.000.

dePolo, Harry R. Process and apparatus for making garments formed of helically joined pieces. 4,198,916, Cl. 112-63.000.

DeRoss, Robert W., to Bunker Ramo Corporation. Semiconductor mounting assembly. 4,199,654, Cl. 174-52.0FP.

Deshpande, Narayan V.: *See—*
Biossey, Daniel F.; Deshpande, Narayan V.; Faucz, Eugene C.; Stange, Klaus K.; and Swackhamer, Stanley B., 4,199,766, Cl. 346-74.100.

Destannes, Louis; Duchene, Jacques; and Meyer, Robert, to Commissariat a l'Energie Atomique. Method of fabrication of a liquid-display cell and a cell obtained by means of said method. 4,199,228, Cl. 350-320.000.

Dezseri, Eszter: *See—*
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, 4,199,505, Cl. 260-244.400.

DIA-NIELSEL GmbH Zubehor fur die Messtechnik: *See—*
Freude, Paul, 4,199,765, Cl. 346-61.000.

Dial-A-Channel, Inc.: *See—*
Doumit, Joseph A., 4,199,781, Cl. 358-83.000.

Diamond Shamrock Corporation: *See—*
Glave, William R.; Johnson, Richard L.; and Hirsch, Arnold L., 4,199,518, Cl. 260-397.200.
Metz, Fred L., 4,199,609, Cl. 426-582.000.

Dieckhaus, Joachim G., to Bally Manufacturing Corporation. Pinball flipper. 4,199,143, Cl. 273-121.00A.

Diggs, Richard E. Apparatus for desalinating water. 4,199,406, Cl. 202-176.000.

Diggs, Richard E. Apparatus for desalinating water. 4,199,407, Cl. 202-176.000.

Digitcom, Inc.: *See—*
Rapp, Edward J.; and Johnson, Glen A., 4,199,814, Cl. 364-474.000.

Dill, George D.; Tomozawa, Atsushi; Fillion, James R.; Ali, Mian Z.; Burwell, Clyde E.; Warner, Brady H., Jr.; and Jones, Richard W., to Communications Satellite Corporation. FDM/TDM Transmultiplexer. 4,199,660, Cl. 370-50.000.

Dimou, George: *See—*
Miller, Kirk D.; Flood, John B.; Dimou, George; Kara, Frederick E.; and Amos, Richard W., 4,199,353, Cl. 75-130.00R.

Dinger, Oris H., Jr.: *See—*
Webre, Rodney F. A., Jr.; and Dinger, Oris H., Jr., 4,199,298, Cl. 414-458.000.

Dito, Rudolph D. Guide apparatus for trailer hitch. 4,199,756, Cl. 340-686.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Wellendorf, Klaus; and Sommer, Ruediger, 4,199,784, Cl. 358-296.000.

Dr. Johannes Heidenhain GmbH: *See—*
Nelle, Gunther; and Ernst, Alfons, 4,198,757, Cl. 33-125.00C.

Doering, Charles W., to Brinly-Hardy Co., Inc. Log splitter. 4,199,015, Cl. 144-193.00A.

Dokken, Rodney D.: *See—*
Carlisle, Thomas P.; and Dokken, Rodney D., 4,199,738, Cl. 333-258.000.

Domsea Farms, Inc.: *See—*
Lindbergh, Jon M., 4,198,925, Cl. 119-3.000.

Donaldson Company, Inc.: *See—*
Berkhoel, James L., 4,199,334, Cl. 55-304.000.

Dorbeck, Leo R., to Canadian Sun Systems Ltd. Solar energy collection system. 4,198,955, Cl. 126-439.000.

Dosch, Thomas J.; and Prakash, Ravinder, to Sierra Research Corporation. Projected reticle optical sighting system. 4,199,257, Cl. 356-252.000.

Doty, Jack A.: *See—*
Hughes, Donald L.; Doty, Jack A.; and Vinson, Charles B., 4,199,610, Cl. 426-590.000.

Doumit, Joseph A., to Dial-A-Channel, Inc. Program schedule displaying system. 4,199,781, Cl. 358-83.000.

Dover Corporation: *See—*
Lasater, Donald A., 4,199,012, Cl. 141-52.000.

Dow Chemical Company, The: *See—*
Caines, Ronald S., 4,199,628, Cl. 428-36.000.
Miller, Theodore E., Jr.; and Stevens, Timothy S., 4,199,323, Cl. 23-230.00R.
Mixan, Craig E.; and Pews, R. Garth, 4,199,581, Cl. 424-250.000.
Murchison, Craig B.; and Murdick, Dewey A., 4,199,522, Cl. 260-449.00R.
Nestrick, Terry J.; and Stehl, Rudolph H., 4,199,330, Cl. 55-67.000.
Palfey, Albert J.; and Hovey, William P., 4,199,389, Cl. 156-196.000.
Pilny, Richard J.; and Regulski, Thomas W., 4,199,625, Cl. 427-385.500.
Roth, Harold H.; Owen, Peter W.; and Chiu, Thomas T., 4,199,561, Cl. 424-32.000.

Dowty Meco Limited: *See—*
Bourne, Nigel G., 4,198,819, Cl. 60-337.000.

Dragan, William B. Manual extruder. 4,198,756, Cl. 222-326.000.

Dragoco Gerberding & Co. GmbH: *See—*
Klein, Erich, 4,199,599, Cl. 424-311.000.

Dravo Corporation: *See—*
Jaquay, Louis H., 4,199,352, Cl. 75-74.000.

Dressen, Anton, to Siemens Aktiengesellschaft. Crystal oscillator having switchably disabled harmonic-tuned output circuit. 4,199,734, Cl. 331-76.000.

Drobish, James L.; and Gougeon, Thomas W., to Procter & Gamble Company, The. Vaginal contraceptive. 4,198,976, Cl. 128-260.000.

Dror, Leon L. Tongue holder. 4,198,967, Cl. 128-136.000.

DSO "Cherna Metalurgia": *See—*
Genev, Ivan V., 4,199,113, Cl. 241-116.00T.

Duchene, Jacques: *See—*
Destannes, Louis; Duchene, Jacques; and Meyer, Robert, 4,199,228, Cl. 350-320.000.

Duffy, Donald D. Retractable awning. 4,198,998, Cl. 135-5.0AT.

Dulout, Charles; Peyrouset, Andre; Panaris, Rene; Hannoun, Claude; and Vincent, Jean, to Societe Nationale Elf Aquitaine (Production); and Institut Pasteur. Process of separating from an aqueous medium a protein or a morphologically organized unit by liquid exclusion chromatography. 4,199,450, Cl. 210-31.00C.

Dunaway, Kenneth W.: *See—*
Brown, Robert L.; Dunaway, Kenneth W.; and Henley, Virgil E., 4,199,393, Cl. 156-401.000.

Dunham-Bush, Inc.: *See—*
Paul, Steven W., 4,199,102, Cl. 236-91.00G.

Dunlop Limited: *See—*
Farmer, Derek; and Woodfield, Christopher, 4,198,858, Cl. 73-146.000.
Searle, Eric H., 4,199,017, Cl. 157-1.100.

Dunn, David S.; Gifford, R. Bruce; and Burke, Edward F., Jr., to MFE Corporation. Transducer positioning apparatus. 4,198,871, Cl. 74-37.000.

Du Pont de Nemours, E. I., and Company: *See—*
Cherkofsky, Saul C., 4,199,592, Cl. 424-273.00R.

Cooper, John L.; and Newnam, James A., 4,199,642, Cl. 428-288.000.

Dupre, Herman K. Adjustable snow making tower. 4,199,103, Cl. 239-14.000.

Durand, Jean-Michel; and Penicaud, Etienne, to Compagnie Industrielle des Telecommunications Cit-Aicatel. Variable peak detector. 4,199,729, Cl. 328-151.000.

Durand, Paul A. Folding pocket device for the reproduction of photographs and other documents. 4,199,250, Cl. 355-39.000.

Durastone Co.: *See*—
Beretta, Angelo V.; and Beretta, David, 4,199,312, Cl. 425-383.000.

Durbin, George E.: *See*—
Kerber, Francis L.; and Durbin, George E., 4,199,134, Cl. 254-164.000.

Durlach, Jean P., to La Cooperation Pharmaceutique Francaise. Derivatives of taurine having reinforced neuro-muscular activity. 4,199,601, Cl. 424-315.000.

Dutcher, Daniel P., to Champion International Corporation. Recloseable dispensing carton and blank therefor. 4,199,063, Cl. 206-626.000.

Dwivedi, Basant K.; and Raniwala, Subodh K., to Chimicasa GmbH. Process for the manufacture of crystalline fructose. 4,199,373, Cl. 127-60.000.

Dwivedi, Basant K.; and Raniwala, Subodh K., to Chimicasa GmbH. Process of preparing crystalline fructose from high fructose corn syrup. 4,199,374, Cl. 127-60.000.

Dykes, Willis G., to Lasco, Inc. Plant destruction utilizing electrically conductive liquid. 4,198,781, Cl. 47-1.300.

Dynamics Corporation of America: *See*—
Parzych, Joseph F., 4,199,268, Cl. 366-306.000.

E. R. Squibb & Sons, Inc.: *See*—
Krapcho, John, 4,199,528, Cl. 260-501.180.
Ondetti, Miguel A.; and Cushman, David W., 4,199,512, Cl. 260-326.12R.

E-Systems, Inc.: *See*—
Holmes, Lloyd H., 4,199,007, Cl. 137-625.170.

Eads, Harold O.; and Robison, James W., to McDonough Co. Axe construction. 4,199,016, Cl. 145-2.00R.

Eagle Iron Works: *See*—
Keeney, Robert B., 4,199,080, Cl. 222-23.000.

Eapen, Kuttakandathil E.: *See*—
Kahn, Marvin L.; and Eapen, Kuttakandathil E., 4,199,604, Cl. 426-327.000.

Eapen, Kuttikandathil E.: *See*—
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Chen, Tsang J., 4,199,363, Cl. 430-512.000.
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Hawke, David; and Kirkwood, M. Janet, 4,198,989, Cl. 128-675.000.
Leppke, Elton D.; and Schuchmann, Russell P., 4,199,798, Cl. 361-76.000.
McTaggart, James E.; and Benson, Nuel C., 4,199,736, Cl. 333-17.00L.
Van Zeeland, Donald L., 4,199,694, Cl. 307-252.00J.

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Ebert, Michael: *See*—
Reick, Franklin G., 4,199,142, Cl. 273-109.000.

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Haupt, Gunter; Fischer, Franz; Handtmann, Arthur; and Bross, Erhard, 4,198,707, Cl. 2-2.500.

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Lentsch, Steven E., 4,199,602, Cl. 424-343.000.

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Hornak, Michael A.; and Edward, Fred E., 4,198,879, Cl. 74-579.00E.

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Wilson, Raymond L.; and Tilley, Leslie J., 4,199,255, Cl. 356-72.000.

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Elam, James O.: *See*—
Barkalow, Clare E.; and Elam, James O., 4,198,963, Cl. 128-53.000.

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Kyte, Derek J.; Hansen, Walter I.; and Craig, Roderick I., 4,199,815, Cl. 364-523.000.

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Dau, Gary J., 4,199,258, Cl. 356-378.000.

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Carpenter, Neil L., 4,199,025, Cl. 166-248.000.

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McMahon, Roy C., 4,199,429, Cl. 204-302.000.
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Barnett, Charles J., 4,199,525, Cl. 260-453.0RW.
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Haupt, Gunter; Fischer, Franz; Handtmann, Arthur; and Bross, Erhard, 4,198,707, Cl. 2-2.500.

Emering, Charles J.: *See*—
Martin, Jerome E.; Martin, Beverley J.; and Emering, Charles J., 4,198,993, Cl. 131-173.000.

Emmons, William D.: *See*—
Falgiatore, Dominic R.; and Emmons, William D., 4,199,643, Cl. 428-290.000.

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Energy Conversion Devices, Inc.: *See*—
Wacks, Harvey H.; and Sarrach, Donald J., 4,199,615, Cl. 427-43.100.

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Tarpley, William B., Jr.; and Culp, Donald R., 4,198,865, Cl. 73-582.000.

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Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H.: *See*—
Tuson, Samuel, 4,199,275, Cl. 405-195.000.

Eolin, Robert W.; Foster, Gordon F.; Mach, Joseph F.; and Maschmeyer, Richard O., to Corning Glass Works. Mixing and injection molding hydrosilicates. 4,199,343, Cl. 65-157.000.

Epis, James J., to United States of America, Navy. Electrical-length equalizer for horn antennas. 4,199,763, Cl. 343-778.000.

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Wheeler, Ronald H.; and Batruch, John R., 4,198,741, Cl. 29-566.300.

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Nelle, Gunther; and Ernst, Alfons, 4,198,757, Cl. 33-125.00C.

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Schlapp, Werner; and Wiessner, Willi, 4,199,248, Cl. 354-286.000.

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Birkhofer, Herbert; and Ersoy, Metin, 4,199,094, Cl. 227-37.000.

ESB Incorporated: *See*—
Johnson, Robert W.; and Raddi, William J., 4,199,754, Cl. 340-577.000.

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Lehmann, Rolf, 4,198,905, Cl. 100-162.00B.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,198,737, Cl. 29-240.000.

Esmond, William G. Pleated artificial kidney. 4,199,457, Cl. 210-321.00B.

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Christensson, Od W., 4,199,097, Cl. 229-31.00R.

Estabrook, Mark R., to Barnes Drill Co. Combined magnetic and cyclonic separating apparatus. 4,199,455, Cl. 210-223.000.

Estes, John H.: *See*—
Cole, Edward L.; Estes, John H.; and Suggitt, Robert M., 4,199,328, Cl. 48-213.000.

Estlick, Raymond J.; and Swenson, Oscar E., to United States of America, Army. Pedestal and gimbal assembly. 4,199,762, Cl. 343-765.000.

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LoMaglio, Lewis C., 4,199,083, Cl. 222-207.000.
Malec, Robert E., 4,198,931, Cl. 123-1.00A.

Ethyl Development Corporation: *See*—
Bowers, Kenneth E.; Merritt, Stephen E.; and Kinslow, William G., Jr., 4,198,886, Cl. 83-112.000.

Euer, Hartmut: *See*—
Bartek, Gerhard; and Euer, Hartmut, 4,198,863, Cl. 73-430.000.
Evans, Anthony C., to Kelsey-Hayes Company. Flexible sealing boot. 4,199,159, Cl. 277-212.0FB.
Evans, Carl H. Hydrogel contact lens. 4,199,231, Cl. 351-160.00H.
Evans, Orde R.; Rhodes, William D.; and Trahan, Joseph O., to Oreco III, Inc. Bumper protection device. 4,198,919, Cl. 114-219.000.
Everett, Leroy J.: *See*—
Reich, Andrew R.; and Everett, Leroy J., 4,199,013, Cl. 141-130.000.
Evkin, Ivan F.; Olevsky, Viktor M.; Ruchinsky, Vitaly R.; Tatyanchikov, Valentin A.; and Nikolaev, Jury N. Rotary film apparatus. 4,199,398, Cl. 159-6.00R.
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Ryer, Jack; Brois, Stanley; and Winans, Esther D., 4,199,463, Cl. 252-51.50A.
Eyermann, Manfred; and Pfeifer, Wolfgang, to Robert Bosch GmbH. Internal combustion engine starter disconnect system. 4,198,945, Cl. 123-179.00B.
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Welch, M. Bruce; and Fahey, Darryl R., 4,199,475, Cl. 252-429.00C.
Fahrenschon, Kurt, to Braun AG. Analog-digital chronometric display. 4,198,810, Cl. 368-239.000.
Faiveley S.A.: *See*—
Monot, Bernard, 4,198,786, Cl. 49-362.000.
Plantureux, Jean, 4,198,909, Cl. 104-26.00A.
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Farmer, Derek; and Woodfield, Christopher, to Dunlop Limited. Method and apparatus for spot marking tires. 4,198,858, Cl. 73-146.000.
Farmer, Gary L. Baseboard dusters for vacuum cleaners. 4,198,727, Cl. 15-396.000.
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Penco, Sergio; Gozzi, Fausto; Angelucci, Francesco; and Arcamone, Federico, 4,199,571, Cl. 424-180.000.
Farrell, Michael G.; and Mastroianni, Sal T., to Motorola, Inc. Integrated circuit method. 4,199,380, Cl. 148-1.500.
Faucz, Eugene C.: *See*—
Blossey, Daniel F.; Deshpande, Narayan V.; Faucz, Eugene C.; Stange, Klaus K.; and Swackhamer, Stanley B., 4,199,766, Cl. 346-74.100.
Fauth, Heinrich: *See*—
Kalberer, Heinz; and Fauth, Heinrich, 4,198,968, Cl. 128-156.000.
Faverino, Robert M. Portable stock rack for pickup truck. 4,199,186, Cl. 296-13.000.
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Rivoallan, Loic A.; and Favre, Francois P., 4,199,221, Cl. 350-96.140.
Fearing, Ralph B., to Stauffer Chemical Company. Poly (oxyorganophosphate/phosphonate) and process for preparing. 4,199,534, Cl. 260-928.000.
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Walzer, Michael, 4,199,469, Cl. 252-146.000.
Feldpausch, Gary R. Tent peg mallet and remover. 4,198,719, Cl. 7-146.000.
Ferguson, Bruce A.; Ptasinski, Leo D.; and Schulz, Harvey E., to Maxant Corporation, The. Fabric covered button. 4,198,733, Cl. 24-113.00R.
Fernow, Karl H.: *See*—
Baumgartner, Friedrich; Fernow, Karl H.; Waisnix, Franz; Weiss, Franz; and Zach, Werner, 4,199,108, Cl. 239-662.000.
Ferrari, Giorgio; and Vecchietti, Vittorio, to Siphar S. A. Carbamates of 2-haloergolines and 2-haloergolenes and process for the preparation thereof. 4,199,579, Cl. 424-248.550.
Ferretti, Bruno. Portable weight lift and force resistive exerciser. 4,199,140, Cl. 272-123.000.
Ferri, Johann W.; Steinmetz, Werner; Briner, Emil; and Fritschi, Bruno, to Luwa AG. Filter box for textile machines. 4,199,333, Cl. 55-290.000.
Ferris, Michael J.; and Morrison, Howard J., to Marvin Glass & Associates. Spring biased extrusion device for surface patterning. 4,199,311, Cl. 425-173.000.
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Fichtel & Sachs AG: *See*—
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Marek, Karl H., 4,199,029, Cl. 169-61.000.
Filipowicz, Mikolaj; and Filipowicz, Piotr, to Biuro Projektow Przemyslu Cukrowniczego "Cukroprojekt". Continuous filtering-settling centrifuge. 4,199,459, Cl. 210-325.000.
Filipowicz, Piotr: *See*—
Filipowicz, Mikolaj; and Filipowicz, Piotr, 4,199,459, Cl. 210-325.000.
Filkow, Colin; and Smith, Richard S., to Sterling Glove Co. Ltd. Glove blocking apparatus. 4,199,089, Cl. 223-79.000.
Fillion, James R.: *See*—
Dill, George D.; Tomozawa, Atsushi; Fillion, James R.; Ali, Mian Z.; Burwell, Clyde E.; Warner, Brady H., Jr.; and Jones, Richard W., 4,199,660, Cl. 370-50.000.
Finkenzeller, Johann: *See*—
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Firth, Jack G.; Jones, Alan; Jones, Thomas A.; and Mann, Brenda, to National Research Development Corporation. Gas sensors. 4,198,850, Cl. 73-23.000.
Fischbeck, Kenneth H., to Xerox Corporation. Coincidence gate ink jet with increased operating pressure window. 4,199,769, Cl. 346-140.00R.
Fischer, Franz: *See*—
Haupt, Gunter; Fischer, Franz; Handtmann, Arthur; and Bross, Erhard, 4,198,707, Cl. 2-2.500.
Fischer, Rainer. Arrangement for the manufacture of synthetic plastic material hollow bodies. 4,199,129, Cl. 249-58.000.
Fischer, Robert G., Jr.: *See*—
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Fisher, Harry S.: *See*—
Fisher, Sidney L.; Fisher, Harry S.; and Leivestad, Ole E., 4,198,724, Cl. 15-302.000.
Fisher, Michael H.: *See*—
Chabala, John C.; and Fisher, Michael H., 4,199,569, Cl. 424-180.000.
Fisher, Sidney L.; Fisher, Harry S.; and Leivestad, Ole E., to Spider Staging, Inc. Automatic window washer. 4,198,724, Cl. 15-302.000.
Fisons Limited: *See*—
Stevenson, Neil A., 4,199,578, Cl. 424-240.000.
Flagg, Gerald K.: *See*—
Reddy, Junuthula N.; and Flagg, Gerald K., 4,198,932, Cl. 123-32.0EG.
Flaherty, Keith L.; and Flaherty, Keith T. Lock assembly for shopping cart to prevent its removal from an authorized area. 4,199,043, Cl. 188-111.000.
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Flaig, Ulrich: *See*—
Klotzner, Winfried; Daumer, Rolf; Zechnall, Martin; Kiencke, Uwe; and Flaig, Ulrich, 4,199,812, Cl. 364-431.000.
Fleetwood, Charles M.; and Rice, Stephen H., to United States of America, National Aeronautics and Space Administration. Method of forming a sharp edge on an optical device. 4,198,788, Cl. 51-283.00R.
Fleischauer, Fred J.; and McCart, Theodore L., to General Logistics Corporation. Controlled slippage, limited torque transmission. 4,198,833, Cl. 64-30.00R.
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Flood, John B.: *See*—
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Ling, Ching-Chung, 4,199,047, Cl. 192-3.300.
Strikis, Guntis V.; Halacka, Michael F.; and Crain, Ronald W., 4,199,304, Cl. 417-310.000.
Forestier, Jean; Leblanc, Bernard; Monteil, Marcel; and Monteil, Pierre, to Commissariat a l'Energie Atomique. Steam generator for a pressurized-water power station. 4,198,929, Cl. 122-32.000.
Forshufvud, Ragnar; and Johansson, Arnold, to Aktiebolaget Bofors. Optical system. 4,199,256, Cl. 356-247.000.
Forster, Franz, to Linde AG. Axial-piston machine of variable output having a slide for displaying the cylinder drum. 4,198,899, Cl. 91-505.000.
Forster, Hans-Joachim M., to Daimler-Benz Aktiengesellschaft. Installation for supplying the electric power supply of motor vehicles. 4,199,713, Cl. 322-2.00R.
Forster, Rolf, to Bernhard Forster, Firma. Dental fixing element. 4,198,753, Cl. 433-8.000.
Fortner, Joseph G.; and Papachristou, Dimitrios, to Memorial Hospital for Cancer and Allied Diseases. Surgical stapling instrument and method. 4,198,982, Cl. 128-334.00C.
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El Gammal, Tarek, 4,199,351, Cl. 75-53.000.
Foster, Gordon F.: *See*—
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Foster, Kenneth J., to Massachusetts Institute of Technology. Thermal insulation structure. 4,198,796, Cl. 52-203.000.
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Pratt, Harry H.; and Cranstoun, David, 4,198,930, Cl. 122-235.00C.
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Foye, Homer J.: *See*—
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Fragas, Restituto R. Corn powder preparation. 4,199,612, Cl. 426-622.000.
Franch, Gino. Rotational speed and torque mechanical transducer. 4,198,881, Cl. 74-665.00R.
Franklin Mint Corporation: *See*—
Harkleroad, Whitney C.; Heyderman, Mark; and Ringle, Louis A., 4,199,061, Cl. 206-232.000.
Frantz, Virgil L., to Graham-White Sales Corp. Dual filter assembly for compressed gas. 4,199,331, Cl. 55-161.000.
Franz, John E., to Monsanto Company. Derivatives of N-trifluoroacetyl-N-phosphonomethylglycine dichloride. 4,199,345, Cl. 71-86.000.
Frederickson, Robert C. A.: *See*—
Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T., 4,199,499, Cl. 260-112.50R.
Freeman, Dennis B.; and Prosser, John L., to Oxy Metal Industries Corporation. Metal treating. 4,199,488, Cl. 260-29.6MP.
Frei, Paul, to Griesser AG. Venetian blind construction. 4,199,019, Cl. 160-172.000.
French, John A., to United States of America, Army. Method for measuring range to a rocket in flight employing a passive ground tracker station. 4,199,760, Cl. 343-112.00D.
Freude, Paul, to DIA-NIELSEL GmbH Zubehor fur die Messtechnik. Printing device for multiple recorders. 4,199,765, Cl. 346-61.000.
Frey, LaVerne L.: *See*—
Bukosky, Allen A.; and Frey, LaVerne L., 4,199,726, Cl. 328-14.000.
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Fuchs, Rainer; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating arthropods with fluorine-substituted phenoxybenzylcarbonyl derivatives. 4,199,596, Cl. 424-304.000.
Fugere, Albert L.; and Kelly, Michael J. Elbow/knee guard. 4,198,708, Cl. 2-16.000.
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Furutachi, Nobuo, 4,199,361, Cl. 430-508.000.
Hinata, Masanao; Mihara, Yuji; Shishido, Tadao; and Adachi, Keiichi, 4,199,360, Cl. 430-503.000.
Yoshida, Satoshi; Mizobuchi, Yuzo; Ikeda, Tomoaki; and Iijima, Toshio, 4,199,357, Cl. 430-270.000.
Yoshida, Takashi; Sakaguchi, Shinji; Katoh, Kazunobu; and Karino, Yukio, 4,199,362, Cl. 430-218.000.
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Fujikawa, Tsuneo; Aoki, Syunichi; and Sasaki, Naoki, to Nissan Motor Company, Limited. Code imprinting system having error preclusion function. 4,198,906, Cl. 101-42.000.
Fujimoto, Hideaki: *See*—
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Fujita, Tomio; and Ueda, Hideyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas diffuser. 4,198,817, Cl. 60-319.000.
Fukunaga, Yukio; and Kamijo, Ken, to Nissan Motor Company, Limited. Seat belt retractor with tension eliminating mechanism. 4,199,172, Cl. 280-807.000.
Fullerton, William W., to Merck & Co., Inc. Liposome particle containing viral or bacterial antigenic subunit. 4,199,565, Cl. 424-89.000.
Fulton, Alan W.: *See*—
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Fumagalli, Enos, to Worthington S.p.A. Concrete pumping apparatus. 4,199,002, Cl. 137-340.000.
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Araki, Tadashi; Seito, Hatsuo; Funabashi, Masayuki; Saito, Ritaro; and Seguchi, Koji, 4,199,554, Cl. 423-239.000.
Fung, Paul S. T. Emulsified fuel composition and surfactant useful therein. 4,199,326, Cl. 44-51.000.
Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive element. 4,199,361, Cl. 430-508.000.
Furutu, Akira, to Japan Banoc'k Co., Ltd. Binding strap. 4,198,772, Cl. 40-21.00R.
Gagnon, Pierre; and Laforest, Pierre. Battens system for raising and lowering sceneries on a stage. 4,199,133, Cl. 254-141.000.
Gajewski, Henry M.: *See*—
Becker, Lawrence F.; and Gajewski, Henry M., 4,198,983, Cl. 128-349.00R.
Gallizia, Achille; and Bandel, Paolo, to Industrie Pirelli S.p.A. Apparatus for the injection molding of pneumatic tires having symmetrical parts of similar physical characteristics. 4,199,315, Cl. 425-572.000.
Gammell, Donald M.; and Foye, Homer J., to Gammell, Donald M., a part interest. Enclosed seal for open top volatile liquid storage tanks. 4,199,074, Cl. 220-218.000.
Gannaway, Thomas W.: *See*—
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Ganz Brothers, Inc.: *See*—
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Ganz, Robert H.; and Conley, Frank, to Ganz Brothers, Inc. Infinitely variable spacing feeder. 4,199,288, Cl. 414-128.000.
Garcia, Abril I. Baseball pitching scoring apparatus. 4,199,141, Cl. 273-26.00A.
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Campbell, Carl D., 4,198,830, Cl. 62-87.000.
Garrison, Judd F.: *See*—
Batts, John H.; and Garrison, Judd F., 4,198,773, Cl. 40-322.000.
Gatsis, John G., to UOP Inc. Process for hydrorefining a hydrocarbon utilizing a non-stoichiometric vanadium sulfide catalyst. 4,199,439, Cl. 208-215.000.
Gatt, Charles Anthony, et al.: *See*—
Gatt, Frank R., 4,198,888, Cl. 83-467.00R.
Gatt, Frank R., to Gatt, Charles Anthony, et al. Slicing apparatus. 4,198,888, Cl. 83-467.00R.
Gaudlitz, Robert T.: *See*—
Washington, James M.; Crowther, Gerald H.; and Gaudlitz, Robert T., 4,198,854, Cl. 73-38.000.
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Birjukov, Sergei B.; Gavrev, Valery S.; Goncharuk, Jury M.; Savitsky, Alexandr V.; and Lonchak, Viktor A., 4,198,866, Cl. 73-613.000.
Gearhart, Robert E., to General Electric Company. Bubble deflector for vapor cooled transformers. 4,199,742, Cl. 336-58.000.
Gebr. Claas Maschinenfabrik GmbH: *See*—
Konekamp, Werner; Harig, Horst; and Isfort, Heinrich, 4,198,804, Cl. 56-341.000.
Gebr. Hennig GmbH: *See*—
Hennig, Kurt; Klein, Manfred; and Stohr, Albert, 4,198,812, Cl. 59-78.100.
Geiss, Edward G.: *See*—
Sword, Carl V.; Halicki, Frank E.; and Geiss, Edward G., 4,199,672, Cl. 219-9.500.
General Battery Corporation: *See*—
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General Electric Company: *See*—
Banucci, Eugene G.; and Boldebuck, Edith M., 4,199,651, Cl. 428-458.000.
Bartos, James W., 4,199,151, Cl. 277-1.000.
Bhattacharya, Ashok K., 4,199,701, Cl. 313-25.000.
Bobo, Melvin; and Stenger, Richard E., 4,198,815, Cl. 60-737.000.
Cooke, Ralph C.; and Wilkerson, James D., Jr., 4,199,205, Cl. 312-214.000.
Curry, Herbert L.; and Hall, Walter L., 4,199,648, Cl. 428-409.000.
Gearhart, Robert E., 4,199,742, Cl. 336-58.000.
Germer, Warren R.; and Palmer, Ansell W., 4,199,717, Cl. 324-116.000.
Hodsdon, Roy F.; and Schaefer, Henry A., 4,199,204, Cl. 312-7.00R.
Linko, Peter J., III; Butts, William R.; Awalt, Susan L.; and Glynn, Charles E., 4,198,839, Cl. 72-199.000.
McLean, James O., 4,199,112, Cl. 241-92.000.
Ostenso, Allen L.; and Johnson, Charles B., 4,199,799, Cl. 361-78.000.
Tachick, Henry N., 4,199,213, Cl. 339-111.000.
Thompson, Donald A., 4,199,035, Cl. 175-410.000.
Varshneya, Arun K.; and Taylor, William L., 4,199,704, Cl. 313-221.000.
von Herrmann, Pieter J.; and Williams, Ronald S., 4,199,539, Cl. 264-0.500.
Woods, Lee O., 4,199,740, Cl. 335-202.000.
General Filters, Inc.: *See*—
Yeagle, Richard J., 4,199,536, Cl. 261-92.000.
General Logistics Corporation: *See*—
Fleischauer, Fred J.; and McCart, Theodore L., 4,198,833, Cl. 64-30.00R.
General Motors Corporation: *See*—
Hawkins, Harold G., 4,199,208, Cl. 339-47.00R.
Hegedus, Louis, 4,199,477, Cl. 252-450.000.
Mann, Gamdur S., 4,199,423, Cl. 204-195.00S.
Mathues, Thomas P.; and Parker, Donald L., 4,198,823, Cl. 60-547.00R.
Pearce, Warren, Jr.; and Ramsey, Charles W., 4,199,214, Cl. 339-147.00P.
Short, William T., 4,199,489, Cl. 260-37.00M.
Sinkevitch, Robert M., 4,199,425, Cl. 204-195.00S.
General Tire & Rubber Company, The: *See*—
Brown, Robert L.; Dunaway, Kenneth W.; and Henley, Virgil E., 4,199,393, Cl. 156-401.000.
Genev, Ivan V., to DSO "Cherna Metalurgia". Disc-type apparatus for crushing hard materials. 4,199,113, Cl. 241-116.00T.
Geolograph Company, The: *See*—
Williams, Henry L., 4,198,760, Cl. 33-311.000.
Geonautics, Inc.: *See*—
Tracy, Henry J.; Holt, David E.; and Tracy, Janet E., 4,199,388, Cl. 156-166.000.

Georges, Richard P.: *See—*
Olson, Donald; and Georges, Richard P., 4,199,105, Cl. 239-498.000.
Geratebau Albin Grunzig & Co.: *See—*
Kaiser, Benno, 4,199,138, Cl. 272-113.000.
Gerlinger, Frederic, to Kuhn, S.A. Haymaking machine. 4,198,805, Cl. 56-370.000.
Germain, Alfred M. J., to Union Siderurgique du Nord et de l'Est de la France (USINOR). Device for mounting rollers in a machine for treating metal sheets or the like. 4,198,994, Cl. 134-122.00R.
Germer, Warren R.; and Palmer, Ansell W., to General Electric Company. Time of day demand metering system and method. 4,199,717, Cl. 324-116.000.
Gerzon, Koert: *See—*
Conrad, Robert A.; and Gerzon, Koert, 4,199,504, Cl. 260-244.400.
Gewerkschaft Eisenhutte Westfalia: *See—*
Steinkuhl, Bernd; and Breuer, Oswald, 4,199,194, Cl. 299-34.000.
Gifford, R. Bruce: *See—*
Dunn, David S.; Gifford, R. Bruce; and Burke, Edward F., Jr., 4,198,871, Cl. 74-37.000.
Giguere, A. Marcel. Apparatus for foot rehabilitation. 4,199,137, Cl. 272-96.000.
Gilbert, Lawrence A.: *See—*
Barford, Brian D.; Gilbert, Lawrence A.; Staab, Robert A.; Collins, Royal D.; and Ries, Charles R., 4,199,468, Cl. 252-103.000.
Novosel, Gerald W.; Gilbert, Lawrence A.; Wee, Maria L. S.; and Mueller, Frank J., 4,199,467, Cl. 252-103.000.
Gill, R. A.: *See—*
Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., 4,199,400, Cl. 162-146.000.
Gillette Company, The: *See—*
Nigro, Louis V., 4,198,978, Cl. 128-285.000.
Trotta, Robert A., 4,198,746, Cl. 30-47.000.
Gilmore, Cecilia; Miller, Donald E.; and Zielinski, Richard J., to SCM Corporation. Low calorie containing imitation dairy products. 4,199,608, Cl. 426-570.000.
Gilmour, George A.: *See—*
Jones, Charles H.; and Gilmour, George A., 4,199,746, Cl. 367-135.000.
Girault, Jean-Pierre Y. B.: *See—*
Raffy, Pierre M.; Andre, Pierre A.; Girault, Jean-Pierre Y. B.; Richter, Gerhard; and Thevenin, Jean-Claude P. H. P., 4,199,295, Cl. 415-115.000.
Girling Limited: *See—*
Ivens, Cyril; and Watson, John C., 4,199,044, Cl. 188-218.0XL.
Gisiger, Urs, to Amiet AG. Permutation lock. 4,198,837, Cl. 70-71.000.
Giusti, Raolo B. Processing vessels. 4,199,266, Cl. 366-296.000.
Givaudan Corporation: *See—*
Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., 4,199,600, Cl. 424-314.000.
Glave, William R.; Johnson, Richard L.; and Hirsch, Arnold L., to Diamond Shamrock Corporation. 1α,3β-Dihydroxy-steroid-5-enes from 1α,2α-epoxy-steroid-4,6-dien-3-ones. 4,199,518, Cl. 260-397.200.
Gliemeroth, Georg; and Meckel, Lothar, to Jenaer Glaswerk Schott & Gen. Process for the production of optical fibers for transmission of communication. 4,199,335, Cl. 65-2.000.
Globe Tool and Engineering Company, The: *See—*
Lachey, Richard N., 4,199,115, Cl. 242-1.10R.
Glynn, Charles E.: *See—*
Linko, Peter J., III; Butts, William R.; Awalt, Susan L.; and Glynn, Charles E., 4,198,839, Cl. 72-199.000.
Godel, Frank-Uwe: *See—*
van den Boom, Johannes; Salwesky, Gert; Godel, Frank-Uwe; and Leitner, Wilfried, 4,199,128, Cl. 248-562.000.
Goettl, Adam D. Centrifugal blower having improved structure for mounting of rotor assembly. 4,199,302, Cl. 415-201.000.
Golas, Eugene A.; Sech, William A.; and Singh, Shri N., to United States Steel Corporation. Apparatus for injection of inert gas to prevent superspeed effect. 4,199,087, Cl. 222-603.000.
Gold, Elijah H.: *See—*
Neustadt, Bernard R.; and Gold, Elijah H., 4,199,597, Cl. 424-308.000.
Golden, Ronald, to Champion International Corporation. Hidden entry system. 4,199,618, Cl. 427-145.000.
Goldman, Daniel S. Decorative fabric and method of making the same. 4,199,640, Cl. 428-192.000.
Goldman, Gerd, to Siemens Aktiengesellschaft. Ionographic recording of X-ray images. 4,199,616, Cl. 427-53.100.
Goldsmith, James S., to United States of America, Navy. Flow control system with density compensation. 4,199,003, Cl. 137-467.500.
Golovakhina, Valentina A.: *See—*
Kachkarov, Alexandr G.; Rozhansky, Sergei B.; Golovakhina, Valentina A.; and Prikhodko, Valery V., 4,198,995, Cl. 134-133.000.
Gombas, Laszlo A. Can end configuration. 4,199,073, Cl. 220-66.000.
Goncharuk, Jury M.: *See—*
Birjukov, Sergei B.; Gavrev, Valery S.; Goncharuk, Jury M.; Savitsky, Alexandr V.; and Lonchak, Viktor A., 4,198,866, Cl. 73-613.000.
Gontowski, Walter S., Jr., to Sprague Electric Company. Integrated circuit for detecting changes in light intensity. 4,199,753, Cl. 340-555.000.
Goodman, Alvin M.; and Weitzel, Charles E., to RCA Corporation. Insulated gate field effect silicon-on-sapphire transistor and method of making same. 4,199,773, Cl. 357-23.000.
Goodson, Sam M., to West Point Pepperell, Inc. Apparatus for dyeing textiles. 4,198,836, Cl. 68-205.00R.
Goodyear Tire & Rubber Company, The: *See—*
Reuter, Rene F.; and Welter, Thomas N. H., 4,198,806, Cl. 57-125.000.
Roberts, Charles W.; and Lowther, Homer B., 4,198,774, Cl. 40-587.000.
Taylor, Challen E., 4,199,542, Cl. 264-563.000.
Goteborgs Bandvaveri AB: *See—*
Sunesson, Sigvard B., 4,199,182, Cl. 254-79.000.
Goto, Kunio: *See—*
Wada, Yoshiyo; Goto, Kunio; and Kinjo, Hisao, 4,199,782, Cl. 455-129.000.
Goto, Tetsuro; and Hasegawa, Hiroshi, to Nippon Kogaku K.K. Synchronizing speed warning apparatus for camera. 4,199,236, Cl. 354-50.000.
Gottzein, Eveline; Ossenberg-Franzes, Friedrich; and Roche, Christian, to Messerschmitt-Bolkow-Blohm GmbH. Magnet suspension railway vehicle. 4,198,910, Cl. 104-281.000.
Gougeon, Thomas W.: *See—*
Drobish, James L.; and Gougeon, Thomas W., 4,198,976, Cl. 128-260.000.
Gould Advance Limited: *See—*
Crowe, John E.; Leach, John M.; and Burchall, Malcolm A., 4,199,807, Cl. 363-132.000.
Gould Inc.: *See—*
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Gouraige, Frantz, Jr. Dental board game apparatus. 4,199,145, Cl. 273-248.000.
Gozzi, Fausto: *See—*
Penco, Sergio; Gozzi, Fausto; Angelucci, Francesco; and Arcamone, Federico, 4,199,571, Cl. 424-180.000.
Graham, Everett S.: *See—*
Pole, Ernest G.; and Graham, Everett S., 4,199,634, Cl. 428-95.000.
Graham, John F.; and Hardy, Donald, to American Filtrona Corporation. Porosity measurement. 4,198,853, Cl. 73-38.000.
Graham-White Sales Corp.: *See—*
Frantz, Virgil L., 4,199,331, Cl. 55-161.000.
Gramckow, Jurgen. Slip sheet pallet with reusable portion. 4,198,912, Cl. 108-51.100.
Granda, Gerald L. Cartridge-type pivotal pin and bushing joint. 4,199,199, Cl. 305-11.000.
Grange, Jean-Claude C.; Hernandez, Philippe; Reynes, Daniel F.; Suzzoni, Jean-Pierre L.; and Tu, Nghiem H., to International Business Machines Corporation. Telephone line circuit. 4,199,664, Cl. 179-18.0FA.
Gravel, J. A. Maurice: *See—*
MacPherson, Ronald W.; Ethier, J. Clement; and Gravel, J. A. Maurice, 4,198,767, Cl. 35-25.000.
Green and Bingham Limited: *See—*
Bingham, Garrick R., 4,199,107, Cl. 239-600.000.
Green, Chester, to Hanscom, Genevieve I.; Magnuson, Robert M.; and Thomson, Lois J., trustees of the estate of Roy M. Magnuson. Shuffle feeder interlocking flights. 4,199,055, Cl. 198-773.000.
Greenfield, Raymond L.; and Lauderdale, John G., to Central Dynamics Ltd. Matrix wipe generator for television signals. 4,199,790, Cl. 358-22.000.
Greenlees, James. Clipboard with elastic band for holding sheets. 4,199,173, Cl. 281-45.000.
Greenlees, Kevin J.: *See—*
Oloff, Clarence M.; Buehring, Willi J.; and Greenlees, Kevin J., 4,199,079, Cl. 222-1.000.
Griehl, Wolfgang: *See—*
Schaefer, Peter; Capaul, Marcel; Griehl, Wolfgang; and Meier, Peter, 4,199,366, Cl. 106-90.000.
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Griesser AG: *See—*
Frei, Paul, 4,199,019, Cl. 160-172.000.
Grinage, Claude M., to Bullard Company, The. Ram and tool block for vertical lathe. 4,198,885, Cl. 82-24.00R.
Grob, Russel W., to Caterpillar Tractor Co. Instrument for measuring the speed in RPM of a rotating gear. 4,199,719, Cl. 324-166.000.
Groeschel, Charles R. Modulation circuitry for use in a music encoding system. 4,198,889, Cl. 84-1.010.
Groner, Warren: *See—*
Kusnetz, Jacob; and Groner, Warren, 4,199,260, Cl. 356-411.000.
Gross, Glenn M., to Norlin Industries, Inc. Tone generator for electronic musical instrument with digital glissando, portamento and vibrato. 4,198,892, Cl. 84-1.250.
Ground, Ernest R., to International Minerals & Chemical Corporation. Mineral ore pellets. 4,199,348, Cl. 75-3.000.
Gruaz, Eric. Container for explosive cartridges. 4,199,057, Cl. 206-3.000.
Gruber, Paul, to Cincinnati Milacron Inc. Method for finishing spherical rollers. 4,198,790, Cl. 51-289.00R.
Grunenthal GmbH: *See—*
van Wersch, Hubert M. A.; Herrling, Siegfried; and Muckter, Heinrich, 4,199,573, Cl. 424-185.000.
Grunke, Richard, to Motoren-und Turbinen-Union Munich GmbH. Method for the manufacture of a molded member from a ceramic material. 4,199,339, Cl. 65-18.000.
Gryctko, Carl E., to I-T-E Imperial Corp. Torque controlling set screw for use with the cable of solderless connectors, or the like. 4,199,216, Cl. 339-272.00R.

GTE Sylvania Incorporated: *See*—
Chadwick, Curt H.; and Reed, Edward D., 4,199,735, Cl. 331-94.50P.
Knoll, William C., 4,199,710, Cl. 315-205.000.
Parent, Edward D.; and McDonough, Thomas B., 4,199,480, Cl. 252-516.000.
Vanderpool, Clarence D., 4,199,617, Cl. 427-64.000.
Guenzel, Ernst W.; Kabilka, Otto; and Lissewski, Dieter. Adjusting mechanism for a ski. 4,199,169, Cl. 280-602.000.
Guest, Randall V.: *See*—
Barker, Lynn M.; and Guest, Randall V., 4,198,870, Cl. 73-799.000.
Guiavarc'h, Etienne. Automatic locks or bolts for the door of an animal-raising cage, especially of a cage for raising hogs. 4,198,927, Cl. 119-27.000.
Gumm, Peter: *See*—
Neumann, Jurgen; and Gumm, Peter, 4,199,269, Cl. 366-343.000.
Gunckel, Thomas L., II; and Irvine, John S., to Rockwell International Corporation. Radiation hardened register file. 4,199,810, Cl. 364-200.000.
Gunther, Roland E. Method of treating dermatitis venenata. 4,199,575, Cl. 424-217.000.
Gupta, Bhagwati P.: *See*—
Lewis, Armand F.; and Gupta, Bhagwati P., 4,198,878, Cl. 74-572.000.
Gurtler, Richard W., to Motorola, Inc. Spontaneous growth of large crystal semiconductor material by controlled melt perturbation. 4,199,397, Cl. 156-620.000.
Gusmer Corporation: *See*—
Gusmer, Frederick E.; Commette, Denis S.; and Bairunas, Robert A., 4,199,303, Cl. 417-216.000.
Gusmer, Frederick E.; Commette, Denis S.; and Bairunas, Robert A., to Gusmer Corporation. Feeder for apparatus for ejecting a mixture of a plurality of liquids. 4,199,303, Cl. 417-216.000.
Gutner, Kenneth H. Bunk bed-ladder arrangement. 4,199,041, Cl. 182-206.000.
Gutridge, Jack E.: *See*—
Marulic, Walter J.; and Gutridge, Jack E., 4,198,785, Cl. 49-304.000.
Gwilt, Charles W., to United States Steel Corporation. Gas barrier coating control apparatus with a readily replaceable gas orifice header segment. 4,198,922, Cl. 118-63.000.
Gyarmati, Laszlo; Racz, Istvan; Szentmiklosi, Peter; and Plachy, Janos, to Novex Talalmanyfejleszto Es Ertekesito Kulkereskedelmi Rt. Solid oral pharmaceutical product with increased efficacy and predetermined steady state of solubility. 4,199,560, Cl. 424-19.000.
H. A. Schlatter AG: *See*—
Richter, Hans, 4,199,749, Cl. 340-347.00P.
H. Niemeyer GmbH: *See*—
Kreft, Gunter; and Husser, Helmut, 4,199,011, Cl. 138-157.000.
Haas, Richard M.: *See*—
Aldridge, Tomm V.; and Haas, Richard M., 4,199,744, Cl. 336-178.000.
Haberle, Friedrich: *See*—
Kress, Dieter; and Haberle, Friedrich, 4,199,284, Cl. 408-233.000.
Hadaway, Bernard M., to Repco Limited. Traversing mechanism. 4,198,787, Cl. 51-231.000.
Halacka, Michael F.: *See*—
Strikis, Guntis V.; Halacka, Michael F.; and Crain, Ronald W., 4,199,304, Cl. 417-310.000.
Halicki, Frank E.: *See*—
Sword, Carl V.; Halicki, Frank E.; and Geiss, Edward G., 4,199,672, Cl. 219-9.500.
Hall, John B.; Wiegers, Wilhelmus J.; Hill, Ira D.; Novak, Robert M.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Acetylated alpha methyl styrene dimers or derivatives in perfumes. 4,199,481, Cl. 252-522.00R.
Hall & Myers: *See*—
Rabinow, Jacob, 4,199,241, Cl. 354-129.000.
Hall, Raymond I., Jr. Link for continuous chains. 4,198,813, Cl. 59-80.000.
Hall, Walter L.: *See*—
Curry, Herbert L.; and Hall, Walter L., 4,199,648, Cl. 428-409.000.
Haller, J. Gilbert. Self-injecting hypodermic syringe device. 4,198,975, Cl. 128-218.00A.
Halliburton Company: *See*—
Murphey, Joseph R., 4,199,484, Cl. 260-13.000.
Hamba-Maschinenfabrik Hans A. Muller GmbH & Co. KG: *See*—
Moller, Erwin, 4,199,050, Cl. 198-429.000.
Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. 4,199,392, Cl. 156-384.000.
Hamm, Thomas: *See*—
Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, 4,199,371, Cl. 127-37.000.
Hammann, Ingeborg: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,199,596, Cl. 424-304.000.
Hamrick, Joseph T.: *See*—
Rose, Leslie C.; and Hamrick, Joseph T., 4,199,024, Cl. 166-59.000.
Hancock, Roger I.: *See*—
Cox, Terence; and Hancock, Roger I., 4,199,027, Cl. 166-274.000.
Handa, Balraj K.: *See*—
Rance, Michael J.; Handa, Balraj K.; and Morgan, Barry A., 4,199,568, Cl. 424-177.000.
Handtmann, Arthur: *See*—
Haupt, Gunter; Fischer, Franz; Handtmann, Arthur; and Bross, Erhard, 4,198,707, Cl. 2-2.500.
Handy Man Electric Company: *See*—
Hunt, Rector S., III, 4,199,803, Cl. 362-263.000.
Hannoun, Claude: *See*—
Dulout, Charles; Peyrouset, Andre; Panaris, Rene; Hannoun, Claude; and Vincent, Jean, 4,199,450, Cl. 210-31.00C.
Hanscom, Genevieve I.: *See*—
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Hansen, Herbert: *See*—
Margraf, Karl H.; and Hansen, Herbert, 4,199,084, Cl. 222-591.000.
Hansen, Walter I.: *See*—
Kyte, Derek J.; Hansen, Walter I.; and Craig, Roderick I., 4,199,815, Cl. 364-523.000.
Hanson, Merlin L.: *See*—
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,199,811, Cl. 364-200.000.
Hara, Hiroshi: *See*—
Yamagishi, Michio; Mizoue, Kazutoshi; Mizutani, Taku; Hara, Hiroshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,199,515, Cl. 260-345.70R.
Harada, Masanori, to Nissan Motor Company, Limited. Vacuum actuated system. 4,198,938, Cl. 123-119.00A.
Hardy, Donald: *See*—
Graham, John F.; and Hardy, Donald, 4,198,853, Cl. 73-38.000.
Harig, Horst: *See*—
Konekamp, Werner; Harig, Horst; and Isfort, Heinrich, 4,198,804, Cl. 56-341.000.
Harkleroad, Whitney C.; Heyderman, Mark; and Ringle, Louis A., to Franklin Mint Corporation. Record album and booklet. 4,199,061, Cl. 206-232.000.
Harms, Engelbert G.: *See*—
Menges, Hans G. L.; Harms, Engelbert G.; and Hegele, Rainer, 4,199,263, Cl. 366-90.000.
Harris Corporation: *See*—
Neale, Ronald G., 4,199,692, Cl. 307-238.000.
Nicolay, Hugh C., 4,198,744, Cl. 29-623.000.
Patterson, Raymond B., III, 4,199,806, Cl. 363-60.000.
Taylor, David L.; and Harris, Stephen A., 4,199,731, Cl. 330-262.000.
Harris, David E., to Autech. Detector pulse enhancement circuit. 4,199,259, Cl. 356-387.000.
Harris, Donald L., to Cordis Corporation. Cardiac pacer lead. 4,198,991, Cl. 128-784.000.
Harris, Stephen A.: *See*—
Taylor, David L.; and Harris, Stephen A., 4,199,731, Cl. 330-262.000.
Harrison, John E., to John D. Hollingsworth on Wheels, Inc. Carding machine cleaning apparatus. 4,198,731, Cl. 19-107.000.
Harrison, John E., Sr., to John D. Hollingsworth on Wheels, Inc. Card cylinder shroud, flat mounting and bearing assembly. 4,198,729, Cl. 19-98.000.
Harvey, David S.: *See*—
Wood, Jonathan R.; Pickin, George A.; and Harvey, David S., 4,199,349, Cl. 75-29.000.
Hasegawa, Hiroshi: *See*—
Goto, Tetsuro; and Hasegawa, Hiroshi, 4,199,236, Cl. 354-50.000.
Hasegawa, Yutaka; and Hirakata, Koichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for preventing after-fire of an internal combustion engine. 4,198,816, Cl. 60-305.000.
Hasler, Rolf: *See*—
Carbonell, Jose; Hasler, Rolf; and Walliser, Roland, 4,199,813, Cl. 364-469.000.
Hassell, John B., Jr.: *See*—
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Hata, Yasuo: *See*—
Inayoshi, Akio; Tomari, Hitomi; Nagatoshi, Kikuo; and Hata, Yasuo, 4,199,491, Cl. 260-31.20R.
Hattori, Masaichi: *See*—
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Haupt, Gunter; Fischer, Franz; Handtmann, Arthur; and Bross, Erhard, to ELTEKA Kunststoff-Technik GmbH; and EBRO Elektrotechnische Fabrik. Soft protective construction. 4,198,707, Cl. 2-2.500.
Hawke, David; and Kirkwood, M. Janet, to Eaton Corporation. Transducer holder. 4,198,989, Cl. 128-675.000.
Hawkins, Harold G., to General Motors Corporation. Hermaphroditic splice terminal. 4,199,208, Cl. 339-47.00R.
Haworth Mfg., Inc.: *See*—
Haworth, Richard G.; and Ten Elshof, Ronald D., 4,198,913, Cl. 108-108.000.
Haworth, Richard G.; Saylor, Charles J.; and Wilson, Harold R., 4,199,206, Cl. 339-4.000.
Haworth, Richard G.; and Ten Elshof, Ronald D., to Haworth Mfg., Inc. Component locking device. 4,198,913, Cl. 108-108.000.
Haworth, Richard G.; Saylor, Charles J.; and Wilson, Harold R., to Haworth Mfg., Inc. Wall panel with prewired power system. 4,199,206, Cl. 339-4.000.
Hayashi, Yoshiaka; and Nakamura, Kazuhiko, to Olympus Optical Co., Ltd. Sample feeder for use in automatic electrophoresis system. 4,199,428, Cl. 204-299.00R.

Hayashi, Yoshiaki: *See*—
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Heavner, Paul W.; Woessner, Roger J.; and Clifford, Susan E., to Baxter Travenol Laboratories, Inc. Combination stopper for use in medical and chemical sampling or testing. 4,198,974, Cl. 128-215.000.
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Luthi, Walter, 4,198,835, Cl. 68-5.00E.
Hecker, Michael F., to Industrial Automation Corp. Internal gripper apparatus having positive container alignment. 4,199,183, Cl. 294-97.000.
Hegedus, Louis, to General Motors Corporation. Method for application of porous wash coats to low porosity refractory catalytic monoliths and the resulting support. 4,199,477, Cl. 252-450.000.
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Menges, Hans G. L.; Harms, Engelbert G.; and Hegele, Rainer, 4,199,263, Cl. 366-90.000.
Heimann GmbH: *See*—
Steinhage, Peter-Wilhelm; and Kunze, Claus, 4,199,218, Cl. 350-1.700.
Heintzelman, Leo A. Spark plug adapter and process. 4,198,944, Cl. 123-169.00R.
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Wilhelm, Donald F.; and Jones, William J., Jr., 4,199,758, Cl. 340-753.000.
Hempill, Hugh G.; and Hurney, Robert E., to Kaiser Engineers, Inc. Process for gasification of coal to maximize coal utilization and minimize quantity and ecological impact of waste products. 4,199,327, Cl. 48-202.000.
Henderson, Kenneth J., to Shandon Southern Products Limited. Tissue processing method. 4,199,558, Cl. 424-3.000.
Hendrikz, John M., to Imperial Group Limited. Treatment of slurries and liquids. 4,199,267, Cl. 366-302.000.
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Brown, Robert L.; Dunaway, Kenneth W.; and Henley, Virgil E., 4,199,393, Cl. 156-401.000.
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Hughes, Richrd M.; and Warnecke, Heinz, 4,199,369, Cl. 106-238.000.
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Kydonieus, Agis F.; and Hyman, Seymour, 4,198,782, Cl. 47-58.000.
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Higgins, Aubin M.; Fowler, James A., Jr.; Mercer, Roger W.; and Kroh, Gunter H., to United States of America, Air Force. Mouth mounted accelerometer pack. 4,198,990, Cl. 128-782.000.
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Weder, Erwin H.; and Weder, Donald E., 4,199,627, Cl. 428-7.000.
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Hiller, Robert E.; and Lawlor, Christopher, to Sherwin-Williams Company, The. Multi-element paint roller. 4,198,723, Cl. 15-230.110.
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Pauli, Ernest H., 4,198,832, Cl. 64-9.00R.
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Hirsch, Arnold L.: *See*—
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Hirschel, Adolf; and Bohm, Horst. Folding partition shiftably suspended from a ceiling. 4,199,018, Cl. 160-84.00R.
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Ikushima, Ichiro; Tanaka, Mitsuo; and Maeda, Minoru, 4,199,222, Cl. 350-96.190.
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Ozasa, Susumu, 4,199,688, Cl. 250-492.00A.
Taguchi, Tamio, 4,199,750, Cl. 340-365.00E.
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Hladik, Stephen M., to Cambridge Filter Corporation. Air filter fabrication method. 4,199,387, Cl. 156-160.000.
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Kalberer, Heinz; and Fauth, Heinrich, 4,198,968, Cl. 128-156.000.
Neumann, Jurgen; and Gumm, Peter, 4,199,269, Cl. 366-343.000.
Hoeksema, Herman, to Upjohn Company, The. Oxazole [2,3-c]-coumarin. 4,199,507, Cl. 548-218.000.
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Melquist, John L.; and Hoff, Glen R., 4,199,476, Cl. 252-431.00R.
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Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., 4,199,600, Cl. 424-314.000.
Valenta, Zdenek, 4,199,530, Cl. 260-586.00C.
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Bush, James H.; and Martin, Samuel A., 4,199,168, Cl. 280-439.000.
Hollyday, Hughlett, III. Feet support attachment for lavatories. 4,198,716, Cl. 4-254.000.
Holme, Rudolph N., to American Cyanamid Company. Process for beneficiating non-sulfide minerals. 4,199,064, Cl. 209-12.000.
Holmes, Lloyd H., to E-Systems, Inc. High frequency-high flow servo valve. 4,199,007, Cl. 137-625.170.
Holroyd, Richard A.; and Bielski, Benon H. J., to United States of America, Energy. Photochemical method for generating superoxide radicals (O_2^-) in aqueous solutions. 4,199,419, Cl. 204-157.10R.
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Holtermann, Ludwig K. Heat flow probe. 4,198,859, Cl. 73-190.00H.
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Keefe, Richard A.; Schurman, David B., Jr.; and Leask, Jon W., 4,199,096, Cl. 228-52.000.
Homeyer, Bernhard: *See*—
Fuchs, Rainer; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,199,596, Cl. 424-304.000.
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Honneffer, Robert W., to Zimmer USA, Inc. Acromioclavicular brace. 4,198,964, Cl. 128-87.00R.
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Horisberger, Hans: *See*—
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Horton, Roy, to Sparex Ltd. of Exeter Airport. Fluid pressure actuators indicator. 4,198,921, Cl. 116-283.000.
Horzer, Gustav; Morth, Johann; and Maschinenfabrik Andritz Aktiengesellschaft. Equipment for removing the residual bark in decorticating facilities. 4,199,066, Cl. 209-626.000.
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Houben, Johan M., to Plasmainvent AG. Plasma spraying apparatus. 4,199,104, Cl. 239-81.000.
Houdaille Industries, Inc.: *See*—
Mandt, Mikkel G., 4,199,452, Cl. 210-104.000.
Hovey, William P.: *See*—
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Howard, Joel A., to Howard Hardware Products, Inc. Lock installation kit. 4,199,060, Cl. 206-231.000.
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Cheale, Daniel; Randall, Bryce E.; and Martin, Eric T., 4,198,904, Cl. 100-45.000.
Howe, Robert K.; and Lee, Len F., to Monsanto Company. 2,4-Disubstituted-5-thiazolecarboxylic acids and derivatives. 4,199,506, Cl. 548-201.000.
Hsiung, Andrew K.; and Eaton, George F., to Neptune Microfloc, Inc. Split flow water treatment plant. 4,199,451, Cl. 210-86.000.
Hsu, Sheng T., to RCA Corporation. Method of making a planar semiconductor on insulating substrate device utilizing the deposition of a dual dielectric layer between device islands. 4,199,384, Cl. 148-174.000.
Hubbard, Leo J., to Precision Handling Devices, Inc. Document tractor. 4,199,091, Cl. 226-74.000.
Hubner, Betty A.; and McNeil, James R., Jr. Carrier means. 4,199,170, Cl. 280-641.000.
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Ruhl, John H., 4,198,895, Cl. 85-7.000.
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Carlisle, Thomas P.; and Dokken, Rodney D., 4,199,738, Cl. 333-258.000.
Martinelli, Robert M.; and Ahrens, Allan F., 4,199,805, Cl. 363-60.000.
Weber, Morris; and Jaehnke, Edgar M., 4,199,123, Cl. 248-168.000.
Hughes, Donald L.; Doty, Jack A.; and Vinson, Charles B., to Procter & Gamble Company, The. Non-hygroscopic dry instant beverage mixes. 4,199,610, Cl. 426-590.000.
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Hughes, Michael Q. Method and apparatus for compressing gas. 4,199,306, Cl. 417-458.000.
Hughes, Richrd M.; and Warnecke, Heinz, to Hercules Incorporated. Aqueous fortified rosin dispersions. 4,199,369, Cl. 106-238.000.
Huignard, Jean P.; and Lehureau, Jean-Claude, to Thomson-CSF. Optical system for recording and reading an information on a tape. 4,199,783, Cl. 358-132.000.
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Humphrey, William E., 4,199,816, Cl. 364-571.000.
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Hung, Roland Y.; and Shih, Kwang K., to International Business Machines Corporation. Method of making an optically isolated monolithic light emitting diode array utilizing epitaxial deposition of graded layers and selective diffusion. 4,199,385, Cl. 148-175.000.
Hunt, Rector S., III, to Handy Man Electric Company. Mercury vapor floodlight fixture assembly and method. 4,199,803, Cl. 362-263.000.
Hunter, Alexander, to Transaction Management, Inc. Cartridge receiving and locking mechanism. 4,199,795, Cl. 360-93.000.
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Kaiho, Keisuke; Yoshida, Risaburo; Ide, Yusaku; and Hirose, Takeshi, 4,199,548, Cl. 422-305.000.
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IDR, Inc.: *See*—
Saylor, Richard, 4,199,656, Cl. 178-66.100.
Igarashi, Kikuo; and Irisawa, Junji, to Shionogi & Co., Ltd. 1-N-Hetero containing aminoglycoside derivatives. 4,199,570, Cl. 424-180.000.
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Clough, George F. G., 4,199,446, Cl. 210-23.00R.
Cox, John M.; and Shephard, Margaret C., 4,199,584, Cl. 424-251.000.
Cox, Terence; and Hancock, Roger I., 4,199,027, Cl. 166-274.000.
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Baldwin, John L. E., 4,199,793, Cl. 360-78.000.
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Industrial Electronic Hardware Corp: *See*—
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Gallizia, Achille; and Bandel, Paolo, 4,199,315, Cl. 425-572.000.
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Courty, Philippe, 4,199,436, Cl. 208-124.000.
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Weber, Heinz P.; Voumard, Claude; and Salathe, Rene P., 4,199,226, Cl. 350-157.000.
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Komendowski, Henry, 4,199,126, Cl. 248-463.000.
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Campbell, Alan S.; and Jennings, Jack H., 4,199,767, Cl. 346-75.000.
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International Synthetic Rubber Co. Ltd., The: *See—*
Timms, Donald G., 4,199,473, Cl. 252-429.00C.
International Telephone and Telegraph Corporation: *See—*
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Levinsky, Boris V.; Pyatakov, Viktor G.; Medunin, Andrei A.; and Moskvitin, Vladimir A., 4,199,547, Cl. 422-133.000.
Irvine, Alexander M.; and Blackburn, John B., to Ciba-Geigy Corporation. Copper phthalocyanine derivatives. 4,199,509, Cl. 260-314.500.
Irvine, John S.: *See—*
Gunckel, Thomas L., II; and Irvine, John S., 4,199,810, Cl. 364-200.000.
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Ishida, Yasuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Split operation type multi-cylinder internal combustion engine. 4,198,940, Cl. 123-119.00A.
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Ikeda, Hiroshi; Ishimaru, Osamu; Nakatake, Teruyoshi; and Sakamoto, Tetsuzo, 4,199,718, Cl. 324-158.0MG.
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Nagano, Masashi; and Isobe, Mitsuhide, 4,198,874, Cl. 74-217.00B.
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Mougins, Georges L., 4,199,273, Cl. 405-52.000.
Ito, Fumio: *See—*
Uchiyama, Takashi; Suzuki, Ryoichi; Ito, Fumio; Nagasaka, Wataru; Okuno, Youichi; and Matsuda, Mutsuhide, 4,199,239, Cl. 354-86.000.
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Oka, Yoshikazu; Itoh, Katsumi; and Hirata, Minoru, 4,199,582, Cl. 424-250.000.
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ITT Industries, Incorporated: *See—*
Sterling, Henley F.; and Humphreys, Richard A., 4,199,415, Cl. 204-15.000.
Ivanovsky Nauchno-Issledovatelsky Institut Khlopchatobumazhnoi Promvshlennosti: *See—*
Lifentsev, Oleg M.; Melnikov, Boris N.; Zaitsev, Gennady E.; and Solovieva, Tamara E., 4,199,319, Cl. 8-116.00R.
Ivens, Cyril; and Watson, John C., to Girling Limited. Disc assemblies for vehicle disc brakes. 4,199,044, Cl. 188-218.0XL.
Iwahara, Makoto, to Victor Company of Japan, Limited. Binaural sound reproduction system. 4,199,658, Cl. 179-1.00G.
Iwai, Yuzuru: *See—*
Omura, Satoshi; Iwai, Yuzuru; Awaya, Juichi; Takahashi, Yoko; and Oiwa, Ruiko, 4,199,514, Cl. 260-343.30R.
Izumita, Morishi: *See—*
Ohtake, Masatoshi; Maeda, Takeshi; and Izumita, Morishi, 4,199,820, Cl. 365-234.000.
J & S Hydraulics Inc.: *See—*
Lowe, Jerome R.; and Russo, Frank P., 4,198,844, Cl. 72-393.000.
Jacks, Kenneth R. Detachable street light base terminal cabinet. 4,199,072, Cl. 220-3.400.
Jacoby, Charles E., to SI Handling Systems, Inc. Material handling apparatus. 4,199,290, Cl. 414-354.000.
Jaehnke, Edgar M.: *See—*
Weber, Morris; and Jaehnke, Edgar M., 4,199,123, Cl. 248-168.000.
Janata, Jiri, to University of Utah. Method and structure for detecting the concentration of oxygen in a substance. 4,198,851, Cl. 73-23.000.
Japan Banoc'k Co., Ltd.: *See—*
Furutu, Akira, 4,198,772, Cl. 40-21.00R.
Japan Steel Works Ltd., The: *See—*
Tsujikura, Takashi, 4,198,855, Cl. 73-40.50R.
Jaquay, Louis H., to Dravo Corporation. Autogenous process for conversion of metal sulfide concentrates. 4,199,352, Cl. 75-74.000.
Jassawalla, Jal S., to Andros Incorporated. Medical infusion system. 4,199,307, Cl. 417-474.000.
Jauch, Kurt: *See—*
Bader, Eugen, deceased; Bader, Antonie, administratix; and Jauch, Kurt, 4,199,285, Cl. 409-206.000.
Jenaer Glaswerk Schott & Gen.: *See—*
Gliemeroth, Georg; and Meckel, Lothar, 4,199,335, Cl. 65-2.000.
Jennings, Jack H.: *See—*
Campbell, Alan S.; and Jennings, Jack H., 4,199,767, Cl. 346-75.000.
Jensen, Ronald P. Intraocular lens for implantation into the posterior chamber of a human eye. 4,198,714, Cl. 3-13.000.
Johann Wolf Gesellschaft m.b.H. KG.: *See—*
Wolf, Johann, 4,199,281, Cl. 406-93.000.
Johansson, Arnold: *See—*
Forshufvud, Ragnar; and Johansson, Arnold, 4,199,256, Cl. 356-247.000.
John D. Hollingsworth on Wheels, Inc.: *See—*
Harrison, John E., 4,198,731, Cl. 19-107.000.
Harrison, John E., Sr., 4,198,729, Cl. 19-98.000.
John Thomas Batts, Inc.: *See—*
Batts, John H.; and Garrison, Judd F., 4,198,773, Cl. 40-322.000.
John Wyeth & Brother Limited: *See—*
Ward, Terence J., 4,199,590, Cl. 424-267.000.
Johns Hopkins University, The: *See—*
Hill, Maynard L., 4,199,715, Cl. 324-72.000.
Johnson, Catherine C.; and Wydeven, Theodore J., to United States of America, National Aeronautics and Space Administration. Reverse osmosis membrane of high urea rejection properties. 4,199,448, Cl. 210-23.00H.
Johnson, Charles B.: *See—*
Ostenso, Allen L.; and Johnson, Charles B., 4,199,799, Cl. 361-78.000.
Johnson Controls, Inc.: *See—*
Bramow, Scott B.; Laakaniemi, Richard N.; and Wichman, Paul E., 4,199,101, Cl. 236-13.000.
Thoma, Paul E., 4,199,021, Cl. 165-1.000.
Johnson, Edwin L.: *See—*
Peniston, Quintin P.; and Johnson, Edwin L., 4,199,496, Cl. 260-112.00R.
Johnson, Glen A.: *See—*
Rapp, Edward J.; and Johnson, Glen A., 4,199,814, Cl. 364-474.000.
Johnson, James L.: *See—*
Laferty, John M.; Johnson, James L.; and Burwell, Blair T., 4,199,551, Cl. 423-6.000.
Johnson, Jerry E., to Ryan Instruments, Inc. Portable compact strip chart recorder with lost-motion protective connection to transducer. 4,199,768, Cl. 346-139.00R.
Johnson & Johnson: *See—*
Millet, Marcus J., 4,198,973, Cl. 128-214.400.
Johnson, Leighton C., to Miles Laboratories, Inc. Staining method by capillary action. 4,199,613, Cl. 427-2.000.
Johnson, Matthey & Co., Limited: *See—*
Middleton, Harry; and Hydes, Paul C., 4,199,416, Cl. 204-44.000.
Johnson, Richard L.: *See—*
Glave, William R.; Johnson, Richard L.; and Hirsch, Arnold L., 4,199,518, Cl. 260-397.200.
Johnson, Robert W.; and Raddi, William J., to ESB Incorporated. Circuit for an emergency lighting and fire detector system. 4,199,754, Cl. 340-577.000.
Johnson, Ronald D. Unloading system having vibratory bin discharge structure. 4,199,282, Cl. 406-136.000.
Johnston, William D.; Von Drasek, Richard J.; and Bull, Warren J., III, to Baxter Travenol Laboratories, Inc. Liquid container with hang tap. 4,199,062, Cl. 206-525.000.
Jones, Alan: *See—*
Firth, Jack G.; Jones, Alan; Jones, Thomas A.; and Mann, Brenda, 4,198,850, Cl. 73-23.000.
Jones, Charles H.; and Gilmour, George A., to Westinghouse Electric Corp. Side looking sonar apparatus. 4,199,746, Cl. 367-135.000.
Jones, Kenneth L., to Procter & Gamble Company, The. Detergent compositions containing salicylate corrosion inhibitor. 4,199,483, Cl. 252-559.000.
Jones, Richard W.: *See—*
Dill, George D.; Tomozawa, Atsushi; Fillion, James R.; Ali, Mian Z.; Burwell, Clyde E.; Warner, Brady H., Jr.; and Jones, Richard W., 4,199,660, Cl. 370-50.000.
Jones, Thomas A.: *See—*
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Jones, Warren W.: *See—*
Daugherty, Roger H.; Jones, Warren W.; and Swensrud, Roger L., 4,199,700, Cl. 310-71.000.
Jones, William J., Jr.: *See—*
Wilhelm, Donald F.; and Jones, William J., Jr., 4,199,758, Cl. 340-753.000.
Jovanovics, Karola: *See—*
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, 4,199,505, Cl. 260-244.400.
Joy, Elwood R. Snow sport vehicle. 4,199,162, Cl. 280-12.00K.
Juhlin, Lars-Erik, to ASEA Aktiebolag. Method and apparatus for controlling the alternating voltage of a static convertor. 4,199,804, Cl. 363-51.000.
Kaase, Frederick C.: *See—*
Lamasney, Michael V.; and Kaase, Frederick C., 4,198,762, Cl. 35-10.400.

Kabilka, Otto: *See*—
Guenzel, Ernst W.; Kabilka, Otto; and Lissewski, Dieter, 4,199,169, Cl. 280-602.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Takeda, Nobuhiro; and Hattori, Masaichi, 4,199,670, Cl. 200-61.45R.
Kachkarov, Alexandr G.; Rozhansky, Sergei B.; Golovakhina, Valentina A.; and Prikhodko, Valery V., to Proektno-Konstruktorskoe Bjuro Elektrogidravliki Akademii Nauk Ukrainskoi SSR. Apparatus for electrohydroblasting of castings. 4,198,995, Cl. 134-133.000.
Kahn, Marvin L.; and Eapen, Kuttakandathil E., to Rich Products Corporation. Intermediate-moisture, ready-to-use, frozen non dairy creamer. 4,199,604, Cl. 426-327.000.
Kahn, Marvin L.; and Eapen, Kuttikandathil E., to Rich Products Corporation. Intermediate-moisture frozen non-dairy coffee creamer. 4,199,605, Cl. 426-330.600.
Kaiho, Keisuke; Yoshida, Risaburo; Ide, Yusaku; and Hirose, Takeshi, to Toyo Ink Manufacturing Co., Ltd. Thermally diffusible composites. 4,199,548, Cl. 422-305.000.
Kaiser, Benno, to Geratebau Albin Grunzig & Co. Gymnastics and game apparatus. 4,199,138, Cl. 272-113.000.
Kaiser Engineers, Inc.: *See*—
Hempill, Hugh G.; and Hurney, Robert E., 4,199,327, Cl. 48-202.000.
Kaivola, Seppo. Intrauterine contraceptive and method of manufacturing the same. 4,198,966, Cl. 128-130.000.
Kajioka, Yasuo: *See*—
Himeji, Akio; Okumura, Tadahiko; and Kajioka, Yasuo, 4,199,279, Cl. 405-303.000.
Kalberer, Heinz; and Fauth, Heinrich, to Hoechst Aktiengesellschaft. Porous shaped article of regenerated cellulose adapted for medical use. 4,198,968, Cl. 128-156.000.
Kalkaslief, Methodios. Standard modules for architectonic compositions. 4,198,791, Cl. 52-35.000.
Kamada, Kazumasa; Kushi, Kenji; Yoshihara, Keisuke; and Nakamoto, Hideo, to Mitsubishi Rayon Company, Limited. Coating composition and a method for producing a synthetic resin molded product having an abrasion resistant surface. 4,199,421, Cl. 204-159.220.
Kameswaran, Venkataraman: *See*—
Berkelhammer, Gerald; and Kameswaran, Venkataraman, 4,199,595, Cl. 424-304.000.
Kamijo, Ken: *See*—
Fukunaga, Yukio; and Kamijo, Ken, 4,199,172, Cl. 280-807.000.
Kamiya, Shunji; Satake, Kunio; Sone, Tomiho; and Teraoka, Tsutomu, to Asahi Kasei Kogyo Kabushiki Kaisha. Block copolymer latex composition. 4,199,490, Cl. 260-29.70D.
Kamminga-Schrijnemakers, Maria G. J.: *See*—
Popma, Theo J. A.; and Kamminga-Schrijnemakers, Maria G. J., 4,199,621, Cl. 427-160.000.
Kan, Peter T.: *See*—
Schaaf, Robert L.; Kan, Peter T.; and Cenker, Moses, 4,199,524, Cl. 260-453.0SP.
Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Oda, Shinichi; Tsuchiya, Hiroshi; Matsushita, Takao; and Kuroda, Takio, 4,199,619, Cl. 427-150.000.
Kaplan, Leonard; and Pruett, Roy L., to Union Carbide Corporation. Process for producing polyhydric alcohols and derivatives. 4,199,521, Cl. 260-449.00L.
Kara, Frederick E.: *See*—
Miller, Kirk D.; Flood, John B.; Dimou, George; Kara, Frederick E.; and Amos, Richard W., 4,199,353, Cl. 75-130.00R.
Karino, Yukio: *See*—
Yoshida, Takashi; Sakaguchi, Shinji; Katoh, Kazunobu; and Karino, Yukio, 4,199,362, Cl. 430-218.000.
Karpati, Egon: *See*—
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Karpaty, Akos: *See*—
Muhlbock, Franz; Karpaty, Akos; and Pross, Wilhelm, 4,199,544, Cl. 422-72.000.
Kaselaan, Valdur; and Appleton, Joseph H. Smoke bomb isolation and containment device. 4,198,856, Cl. 73-40.700.
Kasten, John E. Forage wagon rear wall construction. 4,199,292, Cl. 414-519.000.
Kato, Kaneyoshi: *See*—
Terao, Shinji; and Kato, Kaneyoshi, 4,199,531, Cl. 260-607.0AR.
Kato, Michio: *See*—
Ohrui, Tetsuya; Kato, Michio; Ayano, Masami; Kawaguchi, Tsunejiro; and Abe, Tadashi, 4,199,410, Cl. 203-49.000.
Katoh, Kazunobu: *See*—
Yoshida, Takashi; Sakaguchi, Shinji; Katoh, Kazunobu; and Karino, Yukio, 4,199,362, Cl. 430-218.000.
Kawada, Tatsuya; and Uchida, Hiroshi. Gas purification process. 4,199,553, Cl. 423-226.000.
Kawaguchi, Tsunejiro: *See*—
Ohrui, Tetsuya; Kato, Michio; Ayano, Masami; Kawaguchi, Tsunejiro; and Abe, Tadashi, 4,199,410, Cl. 203-49.000.
Kawashima, Hiroyuki: *See*—
Takeshita, Toru; Niki, Takao; Kawashima, Hiroyuki; and Bannai, Kiyoshi, 4,199,577, Cl. 424-236.000.
Keable, Denis; and Prefontaine, Claude. Portable camper. 4,198,996, Cl. 135-1.00A.
Kearney & Trecker Corporation: *See*—
Kirkham, Edward E., 4,199,286, Cl. 409-233.000.
Keefe, Richard A.; Schurman, David B., Jr.; and Leask, Jon W., to Home Solder Corporation. Solder device having cartridge feed of solder. 4,199,096, Cl. 228-52.000.
Keen, James L.: *See*—
Budinger, William D.; Keen, James L.; and Kellner, Joseph D., 4,198,739, Cl. 29-132.000.
Keeney, Robert B., to Eagle Iron Works. Input monitoring system for sand classifying tank. 4,199,080, Cl. 222-23.000.
Keisoku Giken Co., Ltd.: *See*—
Kobayashi, Akira; and Ihara, Susumu, 4,199,254, Cl. 356-28.000.
Kellner, Joseph D.: *See*—
Budinger, William D.; Keen, James L.; and Kellner, Joseph D., 4,198,739, Cl. 29-132.000.
Kelly, Joe L. Dead bolt cable lock. 4,199,176, Cl. 292-38.000.
Kelly, Joe L. Resiliently biased implement holder. 4,199,180, Cl. 294-33.000.
Kelly, John C.: *See*—
Hora, Heinrich; Hughes, John L.; Kelly, John C.; and Luther-Davies, Barry, 4,199,685, Cl. 250-423.00P.
Kelly, Michael J.: *See*—
Fugere, Albert L.; and Kelly, Michael J., 4,198,708, Cl. 2-16.000.
Kelsey-Hayes Company: *See*—
Evans, Anthony C., 4,199,159, Cl. 277-212.0FB.
Kendall Company, The: *See*—
Arkans, Edward J., 4,198,961, Cl. 128-24.00R.
Taylor, Glenn N., 4,198,984, Cl. 128-349.0BV.
Keneman, Scott A., to RCA Corporation. Electron multiplier input electron optics. 4,199,702, Cl. 313-105.00R.
Kenrich Petrochemicals, Inc.: *See*—
Monte, Salvatore J.; and Sugerman, Gerald, 4,199,517, Cl. 260-348.630.
Kerber, Francis L.; and Durbin, George E., to Seven-Eleven Patents, Inc. Portable winch. 4,199,134, Cl. 254-164.000.
Kerr-McGee Corporation: *See*—
Rado, Theodore A., 4,199,552, Cl. 423-83.000.
Keser, Paul D.; and McAlister, Gerald E., to Butler Manufacturing Company. Weld head control and guidance system. 4,199,674, Cl. 219-124.340.
Kessel, Bernhard. Modular assembly for drain trap. 4,198,717, Cl. 4-286.000.
Kibler, Robert L., to Lambert Brake Corporation. Golf cart brake leveling means. 4,199,042, Cl. 188-18.00A.
Kidder, Kent A. Wire connector. 4,199,211, Cl. 339-98.000.
Kiencke, Uwe; and Zechnall, Martin, to Robert Bosch GmbH. Automatic transmission digital control system. 4,198,882, Cl. 74-866.000.
Kiencke, Uwe: *See*—
Klotzner, Winfried; Daumer, Rolf; Zechnall, Martin; Kiencke, Uwe; and Flaig, Ulrich, 4,199,812, Cl. 364-431.000.
Kijima, Shizumasa; Yamatsu, Isao; Inai, Yuichi; Igarashi, Toshiji; and Nakajima, Yoshikage, to Eisai Co., Ltd. Method of treating hypertension with polyprenyl alcohol ester. 4,199,587, Cl. 424-266.000.
Kim, Sang H., to Eastman Kodak Company. Halide ion-selective devices and methods of determining halides. 4,199,411, Cl. 204-1.00T.
Kim, Sang H.: *See*—
Battaglia, Charles J.; Secord, Denise S.; and Kim, Sang H., 4,199,412, Cl. 204-1.00T.
Kimberley, Walter R., to U.S. Industries, Inc. Egg transporting system. 4,199,051, Cl. 198-482.000.
King, Arthur S. Electrolytic treater. 4,199,427, Cl. 204-263.000.
King, John E.: *See*—
Wahl, Richard E.; King, John E.; Becket, William C.; and Gannaway, Thomas W., 4,198,768, Cl. 35-29.00R.
King, William R., to Phillips Petroleum Company. Method and apparatus for measuring particulate matter flow rate. 4,198,860, Cl. 73-195.000.
Kinjo, Hisao: *See*—
Wada, Yoshiyo; Goto, Kunio; and Kinjo, Hisao, 4,199,782, Cl. 455-129.000.
Kinslow, William G., Jr.: *See*—
Bowers, Kenneth E.; Merritt, Stephen E.; and Kinslow, William G., Jr., 4,198,886, Cl. 83-112.000.
Kirch, William, to Chemplex Company. Manufacture and recovery of olefin polymer particles. 4,199,546, Cl. 422-132.000.
Kirkham, Edward E., to Kearney & Trecker Corporation. Power drawbolt with planetary drive. 4,199,286, Cl. 409-233.000.
Kirkwood, M. Janet: *See*—
Hawke, David; and Kirkwood, M. Janet, 4,198,989, Cl. 128-675.000.
Kirsch, Harry: *See*—
Brendl, Rudolf; Finkenzeller, Johann; Kirsch, Harry; and Weiss, Karl, 4,199,687, Cl. 250-468.000.
Kiss, Bela: *See*—
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Kitagawa Iron Works Co., Ltd.: *See*—
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Kitasato Institute, The: *See*—
Omura, Satoshi; Iwai, Yuzuru; Awaya, Juichi; Takahashi, Yoko; and Oiwa, Ruiko, 4,199,514, Cl. 260-343.30R.
Kitsukawa, Kazumi: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,199,495, Cl. 260-45.85S.
Klein, Erich, to Dragoco Gerberding & Co. GmbH. Glyceryl-tri-3,5,5-trimethylhexanoate protecting the skin therewith and cosmetic compositions therefore. 4,199,599, Cl. 424-311.000.

Klein, Manfred: *See*—
Hennig, Kurt; Klein, Manfred; and Stohr, Albert, 4,198,812, Cl. 59-78.100.

Klotzner, Winfried; Daumer, Rolf; Zechnall, Martin; Kiencke, Uwe; and Flaig, Ulrich, to Robert Bosch GmbH. Apparatus for determining the duration of fuel injection control pulses. 4,199,812, Cl. 364-431.000.

Knoll, William C., to GTE Sylvania Incorporated. Ballast circuit for high intensity discharge (HID) lamps. 4,199,710, Cl. 315-205.000.

Knudsen, David S., to McKenna Equipment Company, Inc. Machine for gripping and sizing containers formed from flexible material. 4,198,901, Cl. 93-55.10M.

Kobayashi, Akira; and Ihara, Susumu, to Sumitomo Electric Industries, Ltd.; Kobayashi, Akira; and Keisoku Giken Co., Ltd. Method of measuring the quantity of movement of an object. 4,199,254, Cl. 356-28.000.

Kobayashi, Fumiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for preventing air-conditioning warm or cool blast from blowing through under a seat. 4,199,187, Cl. 296-24.00R.

Kobayashi, Masaaki: *See*—
Nagaoka, Yoshitomi; and Kobayashi, Masaaki, 4,199,779, Cl. 358-8.000.

Kobayashi, Shinsaku: *See*—
Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, 4,199,519, Cl. 260-413.000.

Kobayashi, Tetsuji: *See*—
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Kober, Herbert: *See*—
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Kobori, Toshio: *See*—
Nakai, Masaaki; Kogure, Yasuzi; Sahara, Masayoshi; and Kobori, Toshio, 4,199,245, Cl. 354-266.000.

Kobuya, Tomohiko: *See*—
Akiyama, Junetsu; Fuchida, Takayoshi; Taya, Akira; Nagafuchi, Kazunori; Kohmoto, Kohtaro; and Kobuya, Tomohiko, 4,199,707, Cl. 313-487.000.

Koehl, Jean-Marie G. R. Interlocking members for excavation liners. 4,199,278, Cl. 405-282.000.

Koei Chemical Co., Ltd.: *See*—
Yasuda, Shinichi; Niwa, Takayasu; and Kurohara, Takayuki, 4,199,470, Cl. 252-184.000.

Kogure, Yasuzi: *See*—
Nakai, Masaaki; Kogure, Yasuzi; Sahara, Masayoshi; and Kobori, Toshio, 4,199,245, Cl. 354-266.000.

Kohmoto, Kohtaro: *See*—
Akiyama, Junetsu; Fuchida, Takayoshi; Taya, Akira; Nagafuchi, Kazunori; Kohmoto, Kohtaro; and Kobuya, Tomohiko, 4,199,707, Cl. 313-487.000.

Kojimoto, Susumu; Sato, Takami; Ono, Junji; Mori, Toshio; and Suzuki, Shigeharu, to Sumitomo Chemical Company, Limited. Irrigation hose. 4,199,106, Cl. 239-542.000.

Kokado, Hiroshi: *See*—
Miyakawa, Nobuhiro; Kokado, Hiroshi; and Inoue, Eiichi, 4,199,413, Cl. 204-2.000.

Kokumai, Jun; Otsuki, Akira; and Ishibashi, Tadashi, to Toyo Ink Manufacturing Co., Ltd. Coating compositions for use in coating can insides and a method for applying the same. 4,199,622, Cl. 427-239.000.

Kollmorgen Technologies Corporation: *See*—
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,199,623, Cl. 427-305.000.

Komendowski, Henry, to Intercraft Industries Corporation. One-piece easel-support member. 4,199,126, Cl. 248-463.000.

Komoto, Mikihisa: *See*—
Oshima, Masanao; Komoto, Mikihisa; Yabuki, Shoichi; and Inokawa, Tsuneo, 4,198,917, Cl. 114-42.000.

Kondo, Shiro, to Olympus Optical Co., Ltd. Radio tuner for coupling with cassette tape recorder. 4,199,724, Cl. 455-344.000.

Konekamp, Werner; Harig, Horst; and Isfort, Heinrich, to Gebr. Claas Maschinenfabrik GmbH. Round baler machine. 4,198,804, Cl. 56-341.000.

Koos, Ronald E.: *See*—
Sumrell, Gene; Mod, Robert R.; Magne, Frank C.; and Koos, Ronald E., 4,199,460, Cl. 252-46.700.

Koppers Company, Inc.: *See*—
Bright, Robert H., 4,199,008, Cl. 137-800.000.

Kosa, Yasunobu: *See*—
Masuhara, Toshiaki; Yasui, Tokumasa; Sakai, Yoshio; Nakajima, Joh; Kosa, Yasunobu; Meguro, Satoshi; and Kubo, Masaharu, 4,199,778, Cl. 357-59.000.

Kovacs, Lajos: *See*—
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, 4,199,505, Cl. 260-244.400.

Krapcho, John, to E. R. Squibb & Sons, Inc. Substituted amides having antiinflammatory activity. 4,199,528, Cl. 260-501.180.

Kratz, David W. Chemical feeder. 4,199,001, Cl. 137-268.000.

Kreft, Gunter; and Husser, Helmut, to H. Niemeyer GmbH. Sleeve for drill pipes. 4,199,011, Cl. 138-157.000.

Kress, Dieter; and Haberle, Friedrich, to Mapal Fabrik fur Prazisionswerkzeuge Dr. Kress KG. Conical reamer. 4,199,284, Cl. 408-233.000.

Kress, Robert W. Model aircraft propulsion system. 4,198,779, Cl. 46-78.000.

Kretschmar, Herbert C.: *See*—
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Kroh, Gunter H.: *See*—
Higgins, Aubin M.; Fowler, James A., Jr.; Mercer, Roger W.; and Kroh, Gunter H., 4,198,990, Cl. 128-782.000.

Krohn, Dennis G.; and Wellauer, John C., to Caterpillar Tractor Co. Deaerator device. 4,199,332, Cl. 55-191.000.

Kubiatowicz, James F., to Custom Concepts, Incorporated. Water activated toy. 4,198,780, Cl. 46-92.000.

Kubo, Masaharu: *See*—
Masuhara, Toshiaki; Yasui, Tokumasa; Sakai, Yoshio; Nakajima, Joh; Kosa, Yasunobu; Meguro, Satoshi; and Kubo, Masaharu, 4,199,778, Cl. 357-59.000.

Kuehn, Joseph R.: *See*—
Lense, Robert F.; and Kuehn, Joseph R., 4,199,058, Cl. 206-45.140.

Kuhlen, Ernst, to Pierburg GmbH & Co., KG. Diaphragm pump. 4,199,535, Cl. 261-34.00A.

Kuhn, Franz J.: *See*—
Weber, Karl-Heinz; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., 4,199,588, Cl. 424-267.000.

Kuhn, S.A.: *See*—
Gerlinger, Frederic, 4,198,805, Cl. 56-370.000.

Kume, Kazunari; Watanabe, Minoru; Ohno, Hideshi; Tamaru, Munetaka; Machida, Takayasu; Nakamura, Seiichi; and Morokawa, Shigeru, to Citizen Watch Co., Ltd. Motor and drive for a timepiece. 4,199,699, Cl. 310-49.00R.

Kummerhoff, Gerhard: *See*—
Muller, Friedrich; Kummerhoff, Gerhard; and Uphues, Ewald, 4,199,117, Cl. 242-75.200.

Kunze, Claus: *See*—
Steinhage, Peter-Wilhelm; and Kunze, Claus, 4,199,218, Cl. 350-1.700.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Araki, Tadashi; Seito, Hatsuo; Funabashi, Masayuki; Saito, Ritaro; and Seguchi, Koji, 4,199,554, Cl. 423-239.000.

Kurihara, Kouzi, to Kitagawa Iron Works Co., Ltd. Drying method and apparatus. 4,198,763, Cl. 34-16.500.

Kuroda, Hiroshi; Nakajima, Yasuo; and Hayashi, Yoshimasa, to Nissan Motor Company, Limited. Dual spark plug ignition engine with EGR system. 4,198,942, Cl. 123-148.0DS.

Kuroda, Takio: *See*—
Oda, Shinichi; Tsuchiya, Hiroshi; Matsushita, Takao; and Kuroda, Takio, 4,199,619, Cl. 427-150.000.

Kurohara, Takayuki: *See*—
Yasuda, Shinichi; Niwa, Takayasu; and Kurohara, Takayuki, 4,199,470, Cl. 252-184.000.

Kushi, Kenji: *See*—
Kamada, Kazumasa; Kushi, Kenji; Yoshihara, Keisuke; and Nakamoto, Hideo, 4,199,421, Cl. 204-159.220.

Kusnetz, Jacob; and Groner, Warren, to Technicon Instruments Corporation. Apparatus and method for determining the concentration in a sample. 4,199,260, Cl. 356-411.000.

Kusumi, Jiro, to Tokyo Shibaura Electric Co., Ltd. Protective circuit for amplifier circuits. 4,199,797, Cl. 361-56.000.

Kutscher, Horst; and Zahs, Gernot, to Vacmetal Gesellschaft fur Vakummetallurgie mbH. Method for the production of quality steels. 4,199,350, Cl. 75-46.000.

Kydonieus, Agis F.; and Hyman, Seymour, to Herculite Protective Fabrics Corporation. Control of agricultural pests by controlled release particles. 4,198,782, Cl. 47-58.000.

Kyova Corporation: *See*—
Ballone, Leslie F., 4,199,009, Cl. 138-112.000.

Kyte, Derek J.; Hansen, Walter I.; and Craig, Roderick I., to Electra Corporation. Typesetter character generating apparatus. 4,199,815, Cl. 364-523.000.

La Cooperation Pharmaceutique Francaise: *See*—
Durlach, Jean P., 4,199,601, Cl. 424-315.000.

Laakaniemi, Richard N.: *See*—
Bramow, Scott B.; Laakaniemi, Richard N.; and Wichman, Paul E., 4,199,101, Cl. 236-13.000.

LaBounty, Roy E. Hydraulic shear. 4,198,747, Cl. 30-134.000.

Lacewell, Truman M. Vending machine for newspapers and magazines. 4,199,077, Cl. 221-213.000.

Lacey, Edward H. System for recharging aquifer and apparatus therefor. 4,199,272, Cl. 405-36.000.

Lachey, Richard N., to Globe Tool and Engineering Company, The. Wire control device for high speed stator winding machine. 4,199,115, Cl. 242-1.10R.

Ladell, Joshua, to U.S. Philips Corporation. Asymmetric texture sensitive X-ray powder diffractometer. 4,199,678, Cl. 250-272.000.

Laferty, John M.; Johnson, James L.; and Burwell, Blair T., to Amax Inc. Recovery of molybdenum and uranium activated charcoal containing molybdenum and residual uranium. 4,199,551, Cl. 423-6.000.

Laforest, Pierre: *See*—
Gagnon, Pierre; and Laforest, Pierre, 4,199,133, Cl. 254-141.000.

Lagana', Vincenzo: *See*—
Zardi, Umberto; and Lagana', Vincenzo, 4,199,537, Cl. 261-112.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Carle, Jacques, 4,198,829, Cl. 62-55.500.

Laitram Corporation, The: *See*—
Lapeyre, James M., 4,199,040, Cl. 182-93.000.

Lam, Hsiao-Ling, to Stauffer Chemical Company. N-Haloethylthiofuranilides and their use as fungicides and acaricides. 4,199,594, Cl. 424-285.000.

Lamasney, Michael V.; and Kaase, Frederick C., to Singer Company, The. Digital radar landmass simulator system. 4,198,762, Cl. 35-10.400.

Lamb, Charles C. T. Fastener for helmet suspension. 4,198,710, Cl. 2-416.000.

Lambert Brake Corporation: *See*—
Kibler, Robert L., 4,199,042, Cl. 188-18.00A.

Lamic, Jackie G.; Pascal, Pierre B.; Schilling, Michel E.; and Zante, Hubert A., to Societe Nationale des Poudres et Explosifs; and Societe Luchaire. Self-propelled engine with separable stages. 4,198,896, Cl. 89-1.818.

Landerville, Timothy L.: *See*—
Oldham, Joel S.; and Landerville, Timothy L., 4,199,156, Cl. 277-92.000.

Landgraf, Hermann; and Worschieschek, Rainer, to Siemens Aktiengesellschaft. Dental handpiece. 4,198,755, Cl. 433-126.000.

Lane, Harvey. Planar sound reproducing speaker system. 4,199,657, Cl. 179-1.0GA.

Langlois, Gordon E.: *See*—
Tamm, Paul W.; and Langlois, Gordon E., 4,199,432, Cl. 208-8.00R.

Lapeyre, James M., to Laitram Corporation, The. Ship ladder. 4,199,040, Cl. 182-93.000.

Lappe, Manfred: *See*—
Rathje, Uwe; and Lappe, Manfred, 4,199,038, Cl. 180-140.000.

Lares, Albert J.: *See*—
Lares, Joseph P.; and Lares, Albert J., 4,198,754, Cl. 433-129.000.

Lares, Joseph P.; and Lares, Albert J. Dental turbine spindle assembly. 4,198,754, Cl. 433-129.000.

Lasater, Donald A., to Dover Corporation. Liquid dispensing nozzle having vapor recovery arrangement. 4,199,012, Cl. 141-52.000.

Lasco, Inc.: *See*—
Dykes, Willis G., 4,198,781, Cl. 47-1.300.

Lauderdale, John G.: *See*—
Greenfield, Raymond L.; and Lauderdale, John G., 4,199,790, Cl. 358-22.000.

Lauwerijssen, Petrus C.; and van Meer, Antonius J., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,199,708, Cl. 313-493.000.

Lawlor, Christopher: *See*—
Hiller, Robert E.; and Lawlor, Christopher, 4,198,723, Cl. 15-230.110.

Lawrence, Brian P.: *See*—
Bergman, Burton; and Lawrence, Brian P., 4,199,120, Cl. 244-129.500.

Leach, John M.: *See*—
Crowe, John E.; Leach, John M.; and Burchall, Malcolm A., 4,199,807, Cl. 363-132.000.

Lear Siegler, Inc.: *See*—
Pareja, Ramon, 4,199,305, Cl. 417-440.000.

Leask, Jon W.: *See*—
Keefe, Richard A.; Schurman, David B., Jr.; and Leask, Jon W., 4,199,096, Cl. 228-52.000.

Leblanc, Bernard: *See*—
Forestier, Jean; Leblanc, Bernard; Monteil, Marcel; and Monteil, Pierre, 4,198,929, Cl. 122-32.000.

Lee, Hop. Converter plug with improved self-locking terminals to standard plug. 4,199,207, Cl. 339-14.00P.

Lee, Len F.: *See*—
Howe, Robert K.; and Lee, Len F., 4,199,506, Cl. 548-201.000.

Lee, Ronald N.: *See*—
Schwee, Leonard J.; Anderson, Wallace E.; Liu, Yuan-Jye; and Lee, Ronald N., 4,199,819, Cl. 365-87.000.

Lee, Sung C.: *See*—
Lucas, John R.; and Lee, Sung C., 4,199,752, Cl. 340-388.000.

Leech, Edward J.: *See*—
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,199,623, Cl. 427-305.000.

Le Febvre, Alfred F. Invertible rain gutter mounting apparatus. 4,199,121, Cl. 248-48.200.

Lefevre, Jean-Paul: *See*—
Soula, Gerard; and Lefevre, Jean-Paul, 4,199,462, Cl. 252-51.50A.

Le Gardeur, Rene: *See*—
Alirot, Jean-Louis; and Le Gardeur, Rene, 4,199,709, Cl. 315-4.000.

Lehmann, Rolf, to Escher Wyss Aktiengesellschaft. Calender composed of controlled deflection rolls. 4,198,905, Cl. 100-162.00B.

Lehureau, Jean-Claude: *See*—
Huignard, Jean P.; and Lehureau, Jean-Claude, 4,199,783, Cl. 358-132.000.

Leisner, Theodore. Fishing rod holder. 4,198,775, Cl. 43-21.200.

Leitner, Wilfried: *See*—
van den Boom, Johannes; Salwesky, Gert; Godel, Frank-Uwe; and Leitner, Wilfried, 4,199,128, Cl. 248-562.000.

Leivestad, Ole E.: *See*—
Fisher, Sidney L.; Fisher, Harry S.; and Leivestad, Ole E., 4,198,724, Cl. 15-302.000.

Leland Stanford Junior University, The Board of Trustees of the: *See*—
Plummer, James D., 4,199,774, Cl. 357-41.000.

Lense, Robert F.; and Kuehn, Joseph R., to Amerock Corporation. Package. 4,199,058, Cl. 206-45.140.

Lentsch, Steven E., to Economics Laboratory, Inc. Control of mastitis and compositions therefor. 4,199,602, Cl. 424-343.000.

Le Page, Jean-Francois: *See*—
Courty, Philippe; Le Page, Jean-Francois; Sugier, Andre; and Cosyns, Jean, 4,199,437, Cl. 208-124.000.

Leppke, Elton D.; and Schuchmann, Russell P., to Eaton Corporation. Phase balance monitoring system incorporating voltage and phase sequence monitoring. 4,199,798, Cl. 361-76.000.

Leroux, Frank W. Hydroponic apparatus. 4,198,783, Cl. 47-60.000.

Le Roy, Patrice M.: *See*—
Senet, Jean-Pierre G.; and Le Roy, Patrice M., 4,199,526, Cl. 260-463.000.

Lesher, George Y.; and Opalka, Chester J., Jr., to Sterling Drug Inc. Di-(lower-alkyl) N-[1,2-dihydro-2-oxo-5-(pyridinyl)-3-pyridinyl-]amino-methylanemalonates. 4,199,586, Cl. 424-263.000.

Leslie, Donald J. Rotor drive for pulsato apparatus. 4,198,880, Cl. 74-661.000.

Leunbach, Ib; Demandt, Kim; and Skilbreid, Ottar, to Scadera A/S. Method for the determination of the electron density in a part volume. 4,199,684, Cl. 250-402.000.

Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, to Saint-Gobain Industries. Controls for toration fiberization. 4,199,338, Cl. 65-16.000.

Levine, Barry F.: *See*—
Bethea, Clyde G.; Levine, Barry F.; Lynch, Robert T.; and Thurmond, Carl D., 4,199,698, Cl. 307-425.000.

Levinsky, Boris V.; Pyatakov, Viktor G.; Medunin, Andrei A.; and Moskvitin, Vladimir A., to Irkutsky Gosudarstvenny Nauchnoissledovatelsky Institut Redkikh I Tsvetnykh Metallov "Irgiredmet". Device for producing foam plastics. 4,199,547, Cl. 422-133.000.

Lewellyn, Morris E.: *See*—
Wang, Samuel S.; Lewellyn, Morris E.; and Smith, Eugene L., Jr., 4,199,065, Cl. 209-166.000.

Lewis, Armand F.; and Gupta, Bhagwati P., to Lord Corporation. Rotary energy storage device. 4,198,878, Cl. 74-572.000.

Lewis, John B., to C.M.T. Tool. Hydraulically actuated garden tool. 4,198,748, Cl. 30-180.000.

Lifentsev, Oleg M.; Melnikov, Boris N.; Zaitsev, Gennady E.; and Solovieva, Tamara E., to Ivanovsky Nauchno-Issledovatelsky Institut Khlopchatobumazhnoi Promvshlennosti. Method for treatment of cotton yarn. 4,199,319, Cl. 8-116.00R.

Lindbergh, Jon M., to Domsea Farms, Inc. Grading small live fish underwater. 4,198,925, Cl. 119-3.000.

Lindblad, Stig M. Device for use in connection with safety belts. 4,199,190, Cl. 297-468.000.

Linde AG: *See*—
Forster, Franz, 4,198,899, Cl. 91-505.000.

Line Kogyo Kabushiki Kaisha: *See*—
Matsushita, Masahiro, 4,199,056, Cl. 198-781.000.

Ling, Ching-Chung, to Ford Motor Company. Hydrokinetic torque converter with lock-up clutch. 4,199,047, Cl. 192-3.300.

Linko, Peter J., III; Butts, William R.; Awalt, Susan L.; and Glynn, Charles E., to General Electric Company. Method for making lightweight composite article. 4,198,839, Cl. 72-199.000.

Lipp, Herbert; and Becker, Wilfried, to Rheinmetall GmbH. Tank mortar. 4,198,897, Cl. 89-13.00R.

Lipps, Jack I.: *See*—
Damron, Earl M.; and Lipps, Jack I., 4,199,193, Cl. 299-31.000.

Lischin, Alan J., to Ceeco. Electronic prepay adapter circuit for central office telephone equipment. 4,199,659, Cl. 179-6.30R.

Lishevskaya, Marina O.: *See*—
Rogovin, Zakhar A.; Morin, Boris P.; and Lishevskaya, Marina O., 4,199,485, Cl. 260-17.4GC.

Lissewski, Dieter: *See*—
Guenzel, Ernst W.; Kabilka, Otto; and Lissewski, Dieter, 4,199,169, Cl. 280-602.000.

Liu, Thomas J.; and Cottigny, Cyrille M., deceased (by Cottigny, Gisele B., executrix), to Asten Group, Inc. Felt for papermaking machine. 4,199,401, Cl. 162-358.000.

Liu, Yuan-Jye: *See*—
Schwee, Leonard J.; Anderson, Wallace E.; Liu, Yuan-Jye; and Lee, Ronald N., 4,199,819, Cl. 365-87.000.

Livingston, Richard D., to Amerock Corporation. Roller bracket assembly for drawers. 4,199,200, Cl. 308-3.800.

Login, Robert B.: *See*—
Newkirk, David D.; and Login, Robert B., 4,199,647, Cl. 428-394.000.

LoMaglio, Lewis C., to Ethyl Corporation. Trigger actuated pump. 4,199,083, Cl. 222-207.000.

Lonchak, Viktor A.: *See*—
Birjukov, Sergei B.; Gavrev, Valery S.; Goncharuk, Jury M.; Savitsky, Alexandr V.; and Lonchak, Viktor A., 4,198,866, Cl. 73-613.000.

Long, James M.: *See*—
Winiasz, Michael E.; and Long, James M., 4,199,291, Cl. 414-416.000.

Longenecker, Levi S. Air cooled electric arc furnace. 4,199,652, Cl. 13-32.000.

Lopez, Louis R., to Corrugated Paper Corporation. Container polygonal in cross-section collapsible to flat condition. 4,199,098, Cl. 229-41.00C.

Lord Corporation: *See*—
Lewis, Armand F.; and Gupta, Bhagwati P., 4,198,878, Cl. 74-572.000.

L'Oreal: *See*—
Vanlerberghe, Guy; and Sebag, Henri, 4,199,562, Cl. 424-47.000.

Lorincz, Csaba: *See*—
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, 4,199,505, Cl. 260-244.400.

Loth, John L. Flow measuring flume of adjustable capacity. 4,199,274, Cl. 405-103.000.

Louderback, Allan L.; and Szatkowski, Paul R. Freeze-stable liquid blood control standard. 4,199,471, Cl. 252-408.000.

Lowe, Charles S., Jr. Hybrid control of time division multiplexing. 4,199,662, Cl. 370-85.000.

Lowe, Jerome R.; and Russo, Frank P., to J & S Hydraulics Inc. Tube expander. 4,198,844, Cl. 72-393.000.

Lowther, Homer B.: *See*—
Roberts, Charles W.; and Lowther, Homer B., 4,198,774, Cl. 40-587.000.

Lucas, John R.; and Lee, Sung C., to Sonetronic Engineering, Inc. Audible signal device. 4,199,752, Cl. 340-388.000.

Ludwig, Howard C., to Westinghouse Electric Corp. Puffer circuit breaker. 4,199,671, Cl. 200-144.00R.

Lummus Company, The: *See*—
Sze, Morgan C.; Bennett, Thomas M.; and Unger, Harold, 4,199,434, Cl. 208-40.000.

Luomanen, Raymond. Airway for drainage of the nasopharynx. 4,198,970, Cl. 128-207.150.

Lupke, Gerd P. H.; and Lupke, Manfred A. A. Apparatus for producing thermoplastic tubing. 4,199,314, Cl. 425-532.000.

Lupke, Manfred A. A.: *See*—
Lupke, Gerd P. H.; and Lupke, Manfred A. A., 4,199,314, Cl. 425-532.000.

Luther-Davies, Barry: *See*—
Hora, Heinrich; Hughes, John L.; Kelly, John C.; and Luther-Davies, Barry, 4,199,685, Cl. 250-423.00P.

Luthi, Walter, to Heberlein Maschinenfabrik AG. Device relating to heater units for the heat-treatment of textile yarns. 4,198,835, Cl. 68-5.00E.

Luwa AG: *See*—
Ferri, Johann W.; Steinmetz, Werner; Briner, Emil; and Fritschi, Bruno, 4,199,333, Cl. 55-290.000.

Lynch, Robert T.: *See*—
Bethea, Clyde G.; Levine, Barry F.; Lynch, Robert T.; and Thurmond, Carl D., 4,199,698, Cl. 307-425.000.

Mach, Joseph F.: *See*—
Eolin, Robert W.; Foster, Gordon F.; Mach, Joseph F.; and Maschmeyer, Richard O., 4,199,343, Cl. 65-157.000.

Machida, Takayasu: *See*—
Kume, Kazunari; Watanabe, Minoru; Ohno, Hideshi; Tamaru, Munetaka; Machida, Takayasu; Nakamura, Seiichi; and Morokawa, Shigeru, 4,199,699, Cl. 310-49.00R.

Machler, Ronald A., to Roper Corporation. Luggage identification system embodied in valance. 4,199,045, Cl. 190-49.000.

MacPherson, Ronald W.; Ethier, J. Clement; and Gravel, J. A. Maurice, to United States of America, Army. Recording system for laser weapon simulator. 4,198,767, Cl. 35-25.000.

Madey, Julius M. J.: *See*—
Tidd, Leon E.; Scott, Alan B.; Madey, Julius M. J.; and Collins, Carter C., 4,199,261, Cl. 356-448.000.

Mae, Michiko: *See*—
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,199,566, Cl. 424-114.000.

Maeda, Minoru: *See*—
Ikushima, Ichiro; Tanaka, Mitsuo; and Maeda, Minoru, 4,199,222, Cl. 350-96.190.

Maeda, Takeshi: *See*—
Ohtake, Masatoshi; Maeda, Takeshi; and Izumita, Morishi, 4,199,820, Cl. 365-234.000.

Maeda, Yorishige, to Toyota Jidosha Kogyo Kabushiki Kaisha. Bearing structure for a cam shaft in internal combustion engines. 4,199,202, Cl. 308-23.000.

Maehara, Toshihumi, to Akebono Brake Industry Co. Ltd. Deceleration detecting type proportioning valve for vehicle. 4,199,197, Cl. 303-24.00F.

Magnafrac: *See*—
Salisbury, Winfield W.; and Stiles, Walter J., 4,199,034, Cl. 175-11.000.

Magne, Frank C.: *See*—
Sumrell, Gene; Mod, Robert R.; Magne, Frank C.; and Koos, Ronald E., 4,199,460, Cl. 252-46.700.

Magnuson, Robert M.: *See*—
Green, Chester, 4,199,055, Cl. 198-773.000.

Magnussen, Robert O., Jr. Modular rack. 4,199,070, Cl. 211-60.00R.

Mahnke, Parker E.; and DeMaeo, Anthony J., to Marcy Gymnasium Equipment Co. Exercising apparatus. 4,199,139, Cl. 272-118.000.

Maki, Arthur A.: *See*—
Emrick, Arthur J.; and Maki, Arthur A., 4,199,665, Cl. 179-18.0AG.

Malec, Robert E., to Ethyl Corporation. Diesel fuel. 4,198,931, Cl. 123-1.00A.

Malm, Douglas E. Headgear with light. 4,199,802, Cl. 362-106.000.

Mandt, Mikkel G., to Houdaille Industries, Inc. Jet aeration channel system. 4,199,452, Cl. 210-104.000.

Mann, Brenda: *See*—
Firth, Jack G.; Jones, Alan; Jones, Thomas A.; and Mann, Brenda, 4,198,850, Cl. 73-23.000.

Mann, Gamdur S., to General Motors Corporation. Heated electrolyte exhaust gas sensor and method of making it. 4,199,423, Cl. 204-195.00S.

Manowitz, Milton: *See*—
Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., 4,199,600, Cl. 424-314.000.

Mansfield, Stanley J. Flexible sheet exercising apparatus. 4,199,136, Cl. 272-65.000.

Mantovani, Elvio; Palladino, Nicola; and Zanobi, Antonio, to Snamprogetti S.p.A. Method for preparing metal-carbonyl clusters immobilized in zeolite, as heterogeneous catalysts. 4,199,478, Cl. 252-455.00Z.

Manufacture de Products Chimiques Protex: *See*—
Balland, Jean, 4,199,320, Cl. 8-139.000.

Mapal Fabrik fur Prazisionswerkzeuge Dr. Kress KG: *See*—
Kress, Dieter; and Haberle, Friedrich, 4,199,284, Cl. 408-233.000.

Marcy Gymnasium Equipment Co.: *See*—
Mahnke, Parker E.; and DeMaeo, Anthony J., 4,199,139, Cl. 272-118.000.

Marek, Karl H., to Fike Metal Products Corporation. Multiple, independently actuatable fire suppression devices each having individual actuating power source. 4,199,029, Cl. 169-61.000.

Margotte, Dieter: *See*—
Adelmann, Siegfried; Margotte, Dieter; and Nouvertne, Werner, 4,199,540, Cl. 264-22.000.

Margraf, Karl H.; and Hansen, Herbert, to Sack GmbH. Foundry ladle support device having guides for ladle placement. 4,199,084, Cl. 222-591.000.

Maringulov, Konstantin A.: *See*—
Danilin, Jury I.; Maringulov, Konstantin A.; and Pavlov, Evgeny N., 4,199,818, Cl. 365-70.000.

Maroszek, Raymond V., to American Can Company. Wristwatch display carton. 4,199,059, Cl. 206-45.180.

Martin, Beverley J.: *See*—
Martin, Jerome E.; Martin, Beverley J.; and Emering, Charles J., 4,198,993, Cl. 131-173.000.

Martin Concrete Engineering Company: *See*—
Chance, John H., 4,199,030, Cl. 172-1.000.

Martin, Eric T.: *See*—
Cheale, Daniel; Randall, Bryce E.; and Martin, Eric T., 4,198,904, Cl. 100-45.000.

Martin, George J., to Abbott Laboratories. Sealing assembly for blending apparatus. 4,199,153, Cl. 277-4.000.

Martin, Jerome E.; Martin, Beverley J.; and Emering, Charles J. Combination smoking and drinking article. 4,198,993, Cl. 131-173.000.

Martin, Michael P.: *See*—
Osman, John M.; and Martin, Michael P., 4,198,852, Cl. 73-37.000.

Martin, Samuel A.: *See*—
Bush, James H.; and Martin, Samuel A., 4,199,168, Cl. 280-439.000.

Martincic, Paul W., to Westinghouse Electric Corp. Encapsulated current transformer. 4,199,743, Cl. 336-96.000.

Martinelli, Robert M.; and Ahrens, Allan F., to Hughes Aircraft Company. Multiphase capacitor diode voltage multiplier. 4,199,805, Cl. 363-60.000.

Marulic, Walter J.; and Gutridge, Jack E., to Pullman Incorporated. Movable threshold door seal. 4,198,785, Cl. 49-304.000.

Marum, Steven E., to Texas Instruments Incorporated. Voltage regulator for integrated injection logic electronic system with liquid crystal display. 4,199,714, Cl. 323-4.000.

Maruyama, Eiichi; and Yamamoto, Hideaki, to Hitachi, Ltd. Semiconductor device and a method of manufacturing the same. 4,199,777, Cl. 357-55.000.

Maruzen Kabushiki Kaisha: *See*—
Yamanoi, Noboru, 4,199,095, Cl. 227-125.000.

Maruzeni, Shouji: *See*—
Toyoshima, Yasuo; Ito, Tadasu; Maruzeni, Shouji; Yasuda, Nozomi; and Terada, Kimio, 4,199,611, Cl. 426-607.000.

Marvin Glass & Associates: *See*—
Ferris, Michael J.; and Morrison, Howard J., 4,199,311, Cl. 425-173.000.
Morrison, Howard J.; and Fletchic, Donald K., 4,198,778, Cl. 46-4.000.

Masaki, Kenji, to Nissan Motor Company, Limited. Method of controlling the air-fuel ratio of an engine air-fuel mixture and a system for executing the method. 4,198,939, Cl. 123-119.0EC.

Maschinenfabrik Andritz Aktiengesellschaft: *See*—
Horzer, Gustav; Morth, Johann; and Maschinenfabrik Andritz Aktiengesellschaft, 4,199,066, Cl. 209-626.000.

Maschmeyer, Richard O.: *See*—
Eolin, Robert W.; Foster, Gordon F.; Mach, Joseph F.; and Maschmeyer, Richard O., 4,199,343, Cl. 65-157.000.

Masclet, Jean, to Messier-Hispano-Bugatti. Wing mounted retractable aircraft undercarriages. 4,199,119, Cl. 244-102.0SS.

Mason, Joseph E. Apparatus for dispensing mercury and dental alloy. 4,199,081, Cl. 222-43.000.

Mason, Winfred A., to Sidewalk Savage Enterprises, Inc. Snow shovel. 4,199,181, Cl. 294-54.000.

Massachusetts Institute of Technology: *See*—
Foster, Kenneth J., 4,198,796, Cl. 52-203.000.

Massey, Carman J.; and Alito, Paul N. Keyboard system for musical instruments. 4,198,890, Cl. 84-1.010.

Masti-Kure Products Company, Inc.: *See*—
Silver, Jules; and Borrows, Thomas G., 4,199,564, Cl. 424-80.000.

Mastroianni, Sal T.: *See*—
Farrell, Michael G.; and Mastroianni, Sal T., 4,199,380, Cl. 148-1.500.

Masuhara, Toshiaki; Yasui, Tokumasa; Sakai, Yoshio; Nakajima, Joh; Kosa, Yasunobu; Meguro, Satoshi; and Kubo, Masaharu, to Hitachi, Ltd. Interconnection structure for semiconductor integrated circuits. 4,199,778, Cl. 357-59.000.

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Natori, Kenji; and Masuoka, Fujio, 4,199,772, Cl. 357-23.000.

Mathues, Thomas P.; and Parker, Donald L., to General Motors Corporation. Method of generating brake actuating pressure. 4,198,823, Cl. 60-547.00R.

Matolcsy, Gyorgy; Bartok nee Berencsy, Piroska; Kiss, Bela; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar Rt. Method of treating noradrenaline dysfunction or for dopamine-β-hydroxylase inhibition. 4,199,598, Cl. 424-315.000.

Matovich, Edwin, to Thagard Technology Company. Fluid-wall reactor for high temperature chemical reaction processes. 4,199,545, Cl. 422-112.000.

Matrix Corporation: *See*—
Spitzke, Arthur, 4,199,165, Cl. 280-87.04A.

Matsuda, Mutsuhide; Tamura, Shuichi; and Tamamura, Hideo, to Canon Kabushiki Kaisha. Camera with autofocusing device. 4,199,235, Cl. 354-25.000.

Matsuda, Mutsuhide: *See*—
Uchiyama, Takashi; Suzuki, Ryoichi; Ito, Fumio; Nagasaka, Wataru; Okuno, Youichi; and Matsuda, Mutsuhide, 4,199,239, Cl. 354-86.000.

Matsui, Kunihiko: *See*—
Tanaka, Shikei; Matsui, Kunihiko; and Kobayashi, Tetsuji, 4,199,696, Cl. 307-309.000.

Matsumoto, Akio. Dirt remover for water tank. 4,198,720, Cl. 15-1.700.

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Matsunaga, Douglas S., to Braner Enterprises, Inc. Recoiler for use in a slitting line having a rotatable drum with remotely expandable side walls. 4,199,116, Cl. 242-63.000.

Matsuoka, Naoki: *See*—
Hori, Yutaka; Sunagawa, Makoto; and Matsuoka, Naoki, 4,199,646, Cl. 428-344.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Minaguchi, Shinichi, 4,199,148, Cl. 274-15.00R.
Nagaoka, Yoshitomi; and Kobayashi, Masaaki, 4,199,779, Cl. 358-8.000.
Yamashita, Akio; Imai, Akihiro; and Hayashi, Yoshiaki, 4,199,229, Cl. 350-357.000.

Matsushita, Masahiro, to Line Kogyo Kabushiki Kaisha. Roller conveyor assembly. 4,199,056, Cl. 198-781.000.

Matsushita, Takao: *See*—
Oda, Shinichi; Tsuchiya, Hiroshi; Matsushita, Takao; and Kuroda, Takio, 4,199,619, Cl. 427-150.000.

Matveev, Vladimir A.: *See*—
Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Matveev, Vladimir A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; Mebel, Vladimir S.; Pravednikov, Erik V.; Rabinovich, Efim M.; and Ushakov, Valery K., 4,198,841, Cl. 72-224.000.

Maxant Corporation, The: *See*—
Ferguson, Bruce A.; Ptasinski, Leo D.; and Schulz, Harvey E., 4,198,733, Cl. 24-113.00R.

Maxudov, Pulat S.: *See*—
Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Matveev, Vladimir A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; Mebel, Vladimir S.; Pravednikov, Erik V.; Rabinovich, Efim M.; and Ushakov, Valery K., 4,198,841, Cl. 72-224.000.

Mayer, Ludwig A.: *See*—
United States of America, National Aeronautics and Space Administration; Christensen, Warren W.; Mayer, Ludwig A.; and Woeller, Fritz H., 4,198,792, Cl. 521-55.000.

Mayer, Peter: *See*—
Topping, John A.; and Mayer, Peter, 4,199,340, Cl. 65-32.000.

Mayernik, Andrew B., to United States Steel Corporation. Apparatus for permanently indicating maximum gas pressure in a system. 4,198,869, Cl. 73-709.000.

Mayfran, Div. of Fischer Industries: *See*—
Morris, James C., 4,199,052, Cl. 198-500.000.

Mazur, Richard J.: *See*—
Pekarcik, John T.; and Mazur, Richard J., 4,199,195, Cl. 303-3.000.

McAfee, Richard C., to SWS Silicones Corporation. Chlorendimidosilicon compounds. 4,199,511, Cl. 260-326.00E.

McAlister, Gerald E.: *See*—
Keser, Paul D.; and McAlister, Gerald E., 4,199,674, Cl. 219-124.340.

McCall, Thomas F.: *See*—
Button, Harold O.; McCall, Thomas F.; and Meyer, Donald W., 4,199,433, Cl. 208-31.000.

McCart, Theodore L.: *See*—
Fleischauer, Fred J.; and McCart, Theodore L., 4,198,833, Cl. 64-30.00R.

McCauley, Kerry. Foot massager. 4,198,962, Cl. 128-33.000.

McCawley, Robert; and Siddle, Kenneth R., to Passavant Corporation. Apparatus for protecting aquatic life passing through a water filter. 4,199,453, Cl. 210-160.000.

McCollum, John D., to Standard Oil Company. Method for detecting underground conditions. 4,199,026, Cl. 166-251.000.

McCullough, John B.; and Merchant, John, to Honeywell Inc. Electronic zoom system. 4,199,785, Cl. 358-180.000.

McCullough, John E., to Arthur D. Little, Inc. Axial compliance/sealing means for improved radial sealing for scroll apparatus and scroll apparatus incorporating the same. 4,199,308, Cl. 418-55.000.

McDonough Co.: *See*—
Eads, Harold O.; and Robison, James W., 4,199,016, Cl. 145-2.00R.

McDonough, Thomas B.: *See*—
Parent, Edward D.; and McDonough, Thomas B., 4,199,480, Cl. 252-516.000.

McFarland, George E. Concrete method and equipment. 4,199,541, Cl. 264-34.000.

McGinley, Emanuel J., to FMC Corporation. Means rendering difficult to disperse materials easily dispersible. 4,199,368, Cl. 106-197.00C.

McGrath, Spencer C., to Cel-Cor Industries, Inc. Apparatus for making exploded cellulosic fiber insulation. 4,198,799, Cl. 53-121.000.

McGraw, Leonard J.: *See*—
Patriarca, William C.; and McGraw, Leonard J., 4,198,918, Cl. 114-197.000.

McGuth, Joseph C.; and Przetak, Edwin J., to Foster Wheeler Energy Corporation. Ceramic lined conduit. 4,199,010, Cl. 138-140.000.

McKee, Raymond J. Composition for write-on key tag and sticker. 4,199,638, Cl. 428-131.000.

McKenna Equipment Company, Inc.: *See*—
Knudsen, David S., 4,198,901, Cl. 93-55.10M.

McLean, James O., to General Electric Company. Processor and bidirectional cutting disc. 4,199,112, Cl. 241-92.000.

McMahon, Roy C., to Electrostatic Equipment Company. Pilot light assembly for electrostatic fluid treaters. 4,199,429, Cl. 204-302.000.

McMahon, Roy C., to Electrostatic Equipment Company. Seal construction for electrostatic fluid treaters. 4,199,430, Cl. 204-302.000.

McNeil, James R., Jr.: *See*—
Hubner, Betty A.; and McNeil, James R., Jr., 4,199,170, Cl. 280-641.000.

McNeill, J. Duncan. Method for investigating the conductivity of layered terrain. 4,199,720, Cl. 324-334.000.

McPeak, Walter G. Match container having a remotely operable striking chamber. 4,199,324, Cl. 44-44.000.

McTaggart, James E.; and Benson, Nuel C., to Eaton Corporation. RF Fuse. 4,199,736, Cl. 333-17.00L.

Mealey, Daniel R. Level gauge calibration apparatus. 4,198,848, Cl. 73-1.00H.

Mebel, Vladimir S.: *See*—
Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Matveev, Vladimir A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; Mebel, Vladimir S.; Pravednikov, Erik V.; Rabinovich, Efim M.; and Ushakov, Valery K., 4,198,841, Cl. 72-224.000.

Meckel, Lothar: *See*—
Gliemeroth, Georg; and Meckel, Lothar, 4,199,335, Cl. 65-2.000.

Medunin, Andrei A.: *See*—
Levinsky, Boris V.; Pyatakov, Viktor G.; Medunin, Andrei A.; and Moskvitin, Vladimir A., 4,199,547, Cl. 422-133.000.

Meguro, Satoshi: *See*—
Masuhara, Toshiaki; Yasui, Tokumasa; Sakai, Yoshio; Nakajima, Joh; Kosa, Yasunobu; Meguro, Satoshi; and Kubo, Masaharu, 4,199,778, Cl. 357-59.000.

Meier, Peter: *See*—
Schaefer, Peter; Capaul, Marcel; Griehl, Wolfgang; and Meier, Peter, 4,199,366, Cl. 106-90.000.

Meijer, Roelf J., to U.S. Philips Corporation. Solar collector, comprising solar tracking means. 4,198,954, Cl. 126-425.000.

Melnikov, Boris N.: *See*—
Lifentsev, Oleg M.; Melnikov, Boris N.; Zaitsev, Gennady E.; and Solovieva, Tamara E., 4,199,319, Cl. 8-116.00R.

Melquist, John L.; and Hoff, Glen R., to Standard Oil Company (Indiana). Olefin polymerization catalyst. 4,199,476, Cl. 252-431.00R.

Memorial Hospital for Cancer and Allied Diseases: *See*—
Fortner, Joseph G.; and Papachristou, Dimitrios, 4,198,982, Cl. 128-334.00C.

Menges, Hans G. L.; Harms, Engelbert G.; and Hegele, Rainer, to Uniroyal AG. Method and apparatus for mixing viscous materials. 4,199,263, Cl. 366-90.000.

Mercer, Roger W.: *See*—
Higgins, Aubin M.; Fowler, James A., Jr.; Mercer, Roger W.; and Kroh, Gunter H., 4,198,990, Cl. 128-782.000.

Merchant, John: *See*—
McCullough, John B.; and Merchant, John, 4,199,785, Cl. 358-180.000.

Mercier, Jacques; and Ponthus, Andre, to Societe d'Etudes d'Automatisation, de Regulation et d'Appareils de Mesures S.A. Cryostat and coolant-supply system therefore. 4,198,828, Cl. 62-55.000.

Merck & Co., Inc.: *See*—
Baldwin, John J., 4,199,580, Cl. 424-248.550.
Chabala, John C.; and Fisher, Michael H., 4,199,569, Cl. 424-180.000.
Fullerton, William W., 4,199,565, Cl. 424-89.000.

Merjan, Stanley. Piling. 4,199,277, Cl. 405-251.000.

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Bowers, Kenneth E.; Merritt, Stephen E.; and Kinslow, William G., Jr., 4,198,886, Cl. 83-112.000.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Gottzein, Eveline; Ossenberg-Franzes, Friedrich; and Roche, Christian, 4,198,910, Cl. 104-281.000.

Messier-Hispano-Bugatti: *See*—
Masclet, Jean, 4,199,119, Cl. 244-102.0SS.

Mestre, Pierre; and Prevost, Henri, to BFG Glassgroup. Process of imparting a permanent curvature to a sheet of glass. 4,199,342, Cl. 65-106.000.

Metz, Fred L., to Diamond Shamrock Corporation. Method for preparing cheese. 4,199,609, Cl. 426-582.000.
Metz, Joseph R., to Norco, Inc. Mechanical screw transmission. 4,198,872, Cl. 74-57.000.
Metzger, Karl-Georg: *See*—
Schroder, Theo; and Metzger, Karl-Georg, 4,199,572, Cl. 424-180.000.
Meyer, Bruno. Slide projector apparatus. 4,199,234, Cl. 353-116.000.
Meyer, Donald W.: *See*—
Button, Harold O.; McCall, Thomas F.; and Meyer, Donald W., 4,199,433, Cl. 208-31.000.
Meyer, Frank, to Automation Industries, Inc. Control system for actuators which can be separately energized and deenergized. 4,199,690, Cl. 307-41.000.
Meyer, Robert: *See*—
Destannes, Louis; Duchene, Jacques; and Meyer, Robert, 4,199,228, Cl. 350-320.000.
Meylan, Pierre, to BBC Brown Boveri & Company Limited. Housing for thermal apparatus and fluid flow machines particularly a steam turbine. 4,199,301, Cl. 415-201.000.
MFE Corporation: *See*—
Dunn, David S.; Gifford, R. Bruce; and Burke, Edward F., Jr., 4,198,871, Cl. 74-37.000.
Michie, David D.: *See*—
Cain, Clarence P.; and Michie, David D., 4,198,987, Cl. 128-663.000.
Michigan Instruments, Inc.: *See*—
Barkalow, Clare E.; and Elam, James O., 4,198,963, Cl. 128-53.000.
Microbox Dr. Welp Gesellschaft mit beschraenkter Haftung and Company: *See*—
Welp. Ulrich; and Sahlmann, Juergen, 4,199,249, Cl. 354-299.000.
Middleton, Harry; and Hydes, Paul C., to Johnson, Matthey & Co., Limited. Composition for the electroplating of gold. 4,199,416, Cl. 204-44.000.
Mihara, Yuji: *See*—
Hinata, Masanao; Mihara, Yuji; Shishido, Tadao; and Adachi, Keiichi, 4,199,360, Cl. 430-503.000.
Miles Laboratories, Inc.: *See*—
Johnson, Leighton C., 4,199,613, Cl. 427-2.000.
Miller, Donald E.: *See*—
Gilmore, Cecilia; Miller, Donald E.; and Zielinski, Richard J., 4,199,608, Cl. 426-570.000.
Miller, Fred L. Process for manufacturing bent knives. 4,198,883, Cl. 74-101.00R.
Miller, George A.; and Weiler, Ernest D., to Rohm and Haas Company. Diels-Alder adducts of 3-isothiazolone 1-oxides and 1,1-dioxides. 4,199,591, Cl. 424-270.000.
Miller, Jack V. Tension ridge tent. 4,198,997, Cl. 135-1.00R.
Miller, Kirk D.; Flood, John B.; Dimou, George; Kara, Frederick E.; and Amos, Richard W., to Canron Inc. Molten metal treatment. 4,199,353, Cl. 75-130.00R.
Miller, Scott; and Whitfield, Larry R. Transmission shift-position indicating system for motor trucks. 4,199,747, Cl. 340-74.000.
Miller, Theodore E., Jr.; and Stevens, Timothy S., to Dow Chemical Company, The. Analytical technique for quantitating acid/salt and base/salt samples for species concentration. 4,199,323, Cl. 23-230.00R.
Miller, Wendell E., to Scott & Fetzer Company, The. Load responsive hydraulic system. 4,198,822, Cl. 60-445.000.
Millet, Marcus J., to Johnson & Johnson. Intravenous catheter assembly with fluid flow restriction capability. 4,198,973, Cl. 128-214.400.
Mills, William M.: *See*—
Quick, Graeme R.; and Mills, William M., 4,198,803, Cl. 56-296.000.
Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, to Argus Chemical Corp. Thiolcarbonate ester stabilizers. 4,199,495, Cl. 260-45.85S.
Minaguchi, Shinichi, to Matsushita Electric Industrial Co., Ltd. Automatic record player. 4,199,148, Cl. 274-15.00R.
Minerbe, Michel A. R., to Societe pour la Recherche, l'Etude et Mise au Point de Tous Brevets, S.O.R.E.B. Forced blowing method for fluids enabling thermal exchanges within a moving mass of material placed in a rotating cylinder. 4,198,761, Cl. 34-10.000.
Minnesota Mining and Manufacturing Company: *See*—
Bent, John H., 4,199,160, Cl. 279-30.000.
Minolta Camera Kabushiki Kaisha: *See*—
Hosomizu, Hiroshi; and Ohta, Yoshiharu, 4,199,242, Cl. 354-145.000.
Nakai, Masaaki; Kogure, Yasuzi; Sahara, Masayoshi; and Kobori, Toshio, 4,199,245, Cl. 354-266.000.
Uesugi, Kyozo; and Tanaka, Osamu, 4,199,227, Cl. 350-187.000.
Mirtich, Michael J.; and Sovey, James S., to United States of America, National Aeronautics and Space Administration. Modification of the electrical and optical properties of polymers. 4,199,650, Cl. 428-421.000.
Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, to Sankyo Company Limited. Higher polyalkenyl fatty acids and esters. 4,199,519, Cl. 260-413.000.
Mita Industrial Company Limited: *See*—
Matsumoto, Shoji; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,199,356, Cl. 430-126.000.
Miyakawa, Nobuhiro; Kokado, Hitoshi; and Inoue, Eiichi, 4,199,413, Cl. 204-2.000.
Mitchell, Allen L., to Hill, Paul David. Stove. 4,198,952, Cl. 126-61.000.
Mitsubishi Gas Chemical Company Inc.: *See*—
Ohtsuka, Sadao; and Yamaguchi, Takaaki, 4,199,472, Cl. 252-427.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Suzuki, Motoo, 4,198,937, Cl. 123-117.90A.
Mitsubishi Rayon Company, Limited: *See*—
Kamada, Kazumasa; Kushi, Kenji; Yoshihara, Keisuke; and Nakamoto, Hideo, 4,199,421, Cl. 204-159.220.
Mitsuhashi, Susumu: *See*—
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,199,566, Cl. 424-114.000.
Mitsui Engineering and Shipbuilding Co., Ltd.: *See*—
Oshima, Masanao; Komoto, Mikihisa; Yabuki, Shoichi; and Inokawa, Tsuneo, 4,198,917, Cl. 114-42.000.
Miura, Tadao: *See*—
Morita, Hiroshi; Miura, Tadao; and Washida, Hiroshi, 4,199,230, Cl. 350-357.000.
Mixan, Craig E.; and Pews, R. Garth, to Dow Chemical Company, The. 1,4-Dithiino pyrazine tetracarbonitriles. 4,199,581, Cl. 424-250.000.
Miyakawa, Nobuhiro; Kokado, Hiroshi; and Inoue, Eiichi, to Mita Industrial Company Limited. Electric recording material and electric recording process. 4,199,413, Cl. 204-2.000.
Miyamae, Toshiaki. Shoe dryer with an orthopaedic means. 4,198,765, Cl. 34-104.000.
Miyasaka, Kenzi; Namiki, Ryo; and Takahashi, Kotaro, to Citizen Watch Co., Ltd. Construction of an analogue crystal wrist watch. 4,198,809, Cl. 368-80.000.
Mizobuchi, Yuzo: *See*—
Yoshida, Satoshi; Mizobuchi, Yuzo; Ikeda, Tomoaki; and Iijima, Toshio, 4,199,357, Cl. 430-270.000.
Mizoue, Kazutoshi: *See*—
Yamagishi, Michio; Mizoue, Kazutoshi; Mizutani, Taku; Hara, Hiroshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,199,515, Cl. 260-345.70R.
Mizrah, Tiberiu, to BBC Brown Boveri & Company, Limited. Method for producing metal patterns on silicon wafers for thermomigration. 4,199,379, Cl. 148-1.500.
Mizutani, Taku: *See*—
Yamagishi, Michio; Mizoue, Kazutoshi; Mizutani, Taku; Hara, Hiroshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,199,515, Cl. 260-345.70R.
Mo och Domsjo Aktiebolag: *See*—
Eriksson, Erik F., 4,199,110, Cl. 241-20.000.
Mobil Oil Corporation: *See*—
Plank, Charles J.; Rosinski, Edward J.; and Rubin, Mae K., 4,199,556, Cl. 423-329.000.
Mod, Robert R.: *See*—
Sumrell, Gene; Mod, Robert R.; Magne, Frank C.; and Koos, Ronald E., 4,199,460, Cl. 252-46.700.
Moehlenpah, Walter G. Razor guard. 4,198,745, Cl. 30-34.00R.
Moller, Erwin, to Hamba-Maschinenfabrik Hans A. Muller GmbH & Co. KG. Apparatus for the packaging of comestibles and the like, especially dairy products, in cup-shaped containers. 4,199,050, Cl. 198-429.000.
Molsberger, Hans-Gunther, to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel. Offshore lift platform. 4,199,276, Cl. 405-198.000.
Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Jr., 4,199,392, Cl. 156-384.000.
Vanderpool, James L., 4,199,677, Cl. 235-463.000.
Monique, Seugnet: *See*—
Renaud, Jean; and Monique, Seugnet, 4,199,482, Cl. 252-559.000.
Monot, Bernard, to Faiveley S.A. Locking device for a sliding door. 4,198,786, Cl. 49-362.000.
Monsanto Company: *See*—
Agrawal, Purushottam D.; and Griesing, John E., 4,199,629, Cl. 428-35.000.
Baer, Massimo, 4,199,493, Cl. 260-40.00R.
Chiang, Robert; and Perry, Eli, 4,199,445, Cl. 210-23.00R.
Franz, John E., 4,199,345, Cl. 71-86.000.
Howe, Robert K.; and Lee, Len F., 4,199,506, Cl. 548-201.000.
Monte, Salvatore J.; and Sugerman, Gerald, to Kenrich Petrochemicals, Inc. Cumylphenol derivatives. 4,199,517, Cl. 260-348.630.
Monteil, Marcel: *See*—
Forestier, Jean; Leblanc, Bernard; Monteil, Marcel; and Monteil, Pierre, 4,198,929, Cl. 122-32.000.
Monteil, Pierre: *See*—
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Montres Rado S.A.: *See*—
Ratajski, Michel P., 4,198,811, Cl. 368-292.000.
Moody, George W.; Wilson, John L.; and Salter, Stephen H., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the. Devices for extracting energy from wave power. 4,198,821, Cl. 60-398.000.
Moon, Keith E., to Cardinal Surveys Company. Method of treating and logging wells. 4,199,680, Cl. 250-260.000.
Moon, Malcolm W.; and Rohrstaff, Diane M., to Upjohn Company, The. Antifungal method, formulations and compounds. 4,199,583, Cl. 424-251.000.
Moore Business Forms, Inc.: *See*—
Sornberger, G. Russell, 4,199,174, Cl. 282-27.500.
Moore, Robert A.: *See*—
Wostl, Wolfgang J.; Segal, Jack S.; Roach, Thomas L.; and Moore, Robert A., 4,199,100, Cl. 235-381.000.

Mordarski, Walter J.; and Zegler, Sylvester T., to Combustion Engineering, Inc. High performance nuclear fuel element. 4,199,404, Cl. 176-66.000.
Morgan, Barry A.: *See—*
Rance, Michael J.; Handa, Balraj K.; and Morgan, Barry A., 4,199,568, Cl. 424-177.000.
Mori, Toshio: *See—*
Kojimoto, Susumu; Sato, Takami; Ono, Junji; Mori, Toshio; and Suzuki, Shigeharu, 4,199,106, Cl. 239-542.000.
Morin, Boris P.: *See—*
Rogovin, Zakhar A.; Morin, Boris P.; and Lishevskaya, Marina O., 4,199,485, Cl. 260-17.4GC.
Morita, Hiroshi; Miura, Tadao; and Washida, Hiroshi, to Tokyo Shibaura Electric Co., Ltd. Electrochromic display device. 4,199,230, Cl. 350-357.000.
Morita, Izuru: *See—*
Wada, Hideo; and Morita, Izuru, 4,199,004, Cl. 137-493.000.
Moritz Madler GmbH & Co KG Koffer- und Lederwarenfabrik: *See—*
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Morokawa, Shigeru: *See—*
Kume, Kazunari; Watanabe, Minoru; Ohno, Hideshi; Tamaru, Munetaka; Machida, Takayasu; Nakamura, Seiichi; and Morokawa, Shigeru, 4,199,699, Cl. 310-49.00R.
Morris, James C., to Mayfran, Div. of Fischer Industries. Conveyor roller wheel assembly. 4,199,052, Cl. 198-500.000.
Morrison, Howard J.; and Fletchic, Donald K., to Marvin Glass & Associates. Amusement device. 4,198,778, Cl. 46-4.000.
Morrison, Howard J.: *See—*
Ferris, Michael J.; and Morrison, Howard J., 4,199,311, Cl. 425-173.000.
Morse, Daniel E., to University of California, The Regents of the. Method to induce spawning in shellfish. 4,198,926, Cl. 119-4.000.
Morth, Johann: *See—*
Horzer, Gustav; Morth, Johann; and Maschinenfabrik Andritz Aktiengesellschaft, 4,199,066, Cl. 209-626.000.
Morton-Norwich Products, Inc.: *See—*
Yu, Chia-Nien, 4,199,508, Cl. 548-143.000.
Moser, Paul; and Rody, Jean, to Ciba-Geigy Corporation. Metal complexes of α-aminophosphonic acid half-esters and of α-aminophosphinic acids. 4,199,494, Cl. 260-45.75N.
Moskvitin, Vladimir A.: *See—*
Levinsky, Boris V.; Pyatakov, Viktor G.; Medunin, Andrei A.; and Moskvitin, Vladimir A., 4,199,547, Cl. 422-133.000.
Motoren-und Turbinen-Union Munich GmbH: *See—*
Grunke, Richard, 4,199,339, Cl. 65-18.000.
Motorola, Inc.: *See—*
Farrell, Michael G.; and Mastroianni, Sal T., 4,199,380, Cl. 148-1.500.
Gurtler, Richard W., 4,199,397, Cl. 156-620.000.
Mougins, Georges L., to ITI Limited. Discontinuous panels for protecting the lower surface of a tabular iceberg and method of installing same. 4,199,273, Cl. 405-52.000.
Muckter, Heinrich: *See—*
van Wersch, Hubert M. A.; Herrling, Siegfried; and Muckter, Heinrich, 4,199,573, Cl. 424-185.000.
Mueller, Frank J.: *See—*
Novosel, Gerald W.; Gilbert, Lawrence A.; Wee, Maria L. S.; and Mueller, Frank J., 4,199,467, Cl. 252-103.000.
Mueller, Klaus W., to Stauffer Chemical Company. Labyrinth sealing system. 4,199,154, Cl. 277-53.000.
Mues, Volker; Behrenz, Wolfgang; Rauleder, Gebhard; and Waldmann, Helmut, to Bayer Aktiengesellschaft. Combating arthropods with 5-(3,4-methylenedioxybenzyl)-dioxolanes and synergistic compositions therewith. 4,199,593, Cl. 424-282.000.
Muggli, Juerg, to Polaroid Corporation. Ultrasonic ranging system for a camera. 4,199,246, Cl. 354-195.000.
Muhlbock, Franz; Karpaty, Akos; and Pross, Wilhelm, to Compur-Electronic Gesellschaft mit beschrankter Haftung. Read-off device for medical samples. 4,199,544, Cl. 422-72.000.
Muhlemann, Hans R., to Bayer Aktiengesellschaft. Dental treatment agents and their medicinal use. 4,199,563, Cl. 424-49.000.
Muller, Friedrich; Kummerhoff, Gerhard; and Uphues, Ewald, to Sundwiger Eisenhutte Maschinenfabrik Grah & Co. Winding device for metal strips. 4,199,117, Cl. 242-75.200.
Muller, Maximilian E. Process for removing dust and grease from phonograph records. 4,199,375, Cl. 134-4.000.
Mullooly, John F.: *See—*
Puri, Arun; and Mullooly, John F., 4,199,403, Cl. 176-61.000.
Mumford, Eustace H.; and Perry, Jack I., to Owens-Illinois, Inc. 90° Sweepout cylinder with adjustable stroke. 4,199,344, Cl. 65-260.000.
Munday, Peter J., to Racal Group Services Limited. Data transmission. 4,199,821, Cl. 375-60.000.
Mung-Kuen Luk, Catherine, to Carice International Products, Ltd. Temperature indicators. 4,198,861, Cl. 73-356.000.
Murchison, Craig B.; and Murdick, Dewey A., to Dow Chemical Company, The. Process for producing olefins from carbon monoxide and hydrogen. 4,199,522, Cl. 260-449.00R.
Murdick, Dewey A.: *See—*
Murchison, Craig B.; and Murdick, Dewey A., 4,199,522, Cl. 260-449.00R.
Murphey, Joseph R., to Halliburton Company. Gelled water epoxy sand consolidation system. 4,199,484, Cl. 260-13.000.
N L Industries, Inc.: *See—*
Roth, Albert B.; and Thacher, Wallace L., 4,198,820, Cl. 60-369.000.
N/S Car Wash Enterprises, Inc.: *See—*
Ennis, George T., 4,198,722, Cl. 15-53.0AB.
Nagafuchi, Kazunori: *See—*
Akiyama, Junetsu; Fuchida, Takayoshi; Taya, Akira; Nagafuchi, Kazunori; Kohmoto, Kohtaro; and Kobuya, Tomohiko, 4,199,707, Cl. 313-487.000.
Nagano, Masashi; Fujimoto, Hideaki; and Isobe, Mitsuhide, to Shimano Industrial Company Limited. Speed changing device for a bicycle and the like. 4,198,873, Cl. 74-217.00B.
Nagano, Masashi; and Isobe, Mitsuhide, to Shimano Industrial Company Limited. Derailleur for bicycles and similar vehicles. 4,198,874, Cl. 74-217.00B.
Nagano, Masashi, to Shimano Industrial Company Limited. Multi-stage sprocket assembly for a bicycle. 4,198,876, Cl. 74-243.00R.
Nagaoka, Yoshitomi; and Kobayashi, Masaaki, to Matsushita Electric Industrial Co., Ltd. VIR-Signal processing circuitry for video tape recorder. 4,199,779, Cl. 358-8.000.
Nagasaka, Wataru: *See—*
Uchiyama, Takashi; Suzuki, Ryoichi; Ito, Fumio; Nagasaka, Wataru; Okuno, Youichi; and Matsuda, Mutsuhide, 4,199,239, Cl. 354-86.000.
Nagatoshi, Kikuo: *See—*
Inayoshi, Akio; Tomari, Hitomi; Nagatoshi, Kikuo; and Hata, Yasuo, 4,199,491, Cl. 260-31.20R.
Nakagawa, Takeo; Suzuki, Kiyoshi; and Okawa, Hiroyasu, to Aida Engineering, Ltd.; and Nakagawa, Takeo. Method of manufacturing a punching die. 4,198,884, Cl. 76-107.00R.
Nakahara, Yutaka: *See—*
Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,199,495, Cl. 260-45.85S.
Nakai, Masaaki; Kogure, Yasuzi; Sahara, Masayoshi; and Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Power source switch for cameras. 4,199,245, Cl. 354-266.000.
Nakajima, Joh: *See—*
Masuhara, Toshiaki; Yasui, Tokumasa; Sakai, Yoshio; Nakajima, Joh; Kosa, Yasunobu; Meguro, Satoshi; and Kubo, Masaharu, 4,199,778, Cl. 357-59.000.
Nakajima, Yasuo: *See—*
Kuroda, Hiroshi; Nakajima, Yasuo; and Hayashi, Yoshimasa, 4,198,942, Cl. 123-148.0DS.
Nakajima, Yoshikage: *See—*
Kijima, Shizumasa; Yamatsu, Isao; Inai, Yuichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,199,587, Cl. 424-266.000.
Nakamoto, Hideo: *See—*
Kamada, Kazumasa; Kushi, Kenji; Yoshihara, Keisuke; and Nakamoto, Hideo, 4,199,421, Cl. 204-159.220.
Nakamura, Kazuhiko: *See—*
Hayashi, Yoshiaka; and Nakamura, Kazuhiko, 4,199,428, Cl. 204-299.00R.
Nakamura, Seiichi: *See—*
Kume, Kazunari; Watanabe, Minoru; Ohno, Hideshi; Tamaru, Munetaka; Machida, Takayasu; Nakamura, Seiichi; and Morokawa, Shigeru, 4,199,699, Cl. 310-49.00R.
Nakano, Yoshiyuki, to Nippon Kogaku K.K. Release mechanism for camera. 4,199,243, Cl. 354-173.000.
Nakatake, Teruyoshi: *See—*
Ikeda, Hiroshi; Ishimaru, Osamu; Nakatake, Teruyoshi; and Sakamoto, Tetsuzo, 4,199,718, Cl. 324-158.0MG.
Nakayama, Yasuharu; and Aihara, Tetsuo, to Saegusa International Patent Office. Aqueous resin composition cross-linkable by oxidation. 4,199,487, Cl. 260-23.0AR.
Namae, Takao, to Nihon Denshi Kabushiki Kaisha. Method and apparatus for automatically focusing an electron beam in a scanning beam device. 4,199,681, Cl. 250-311.000.
Namiki, Ryo: *See—*
Miyasaka, Kenzi; Namiki, Ryo; and Takahashi, Kotaro, 4,198,809, Cl. 368-80.000.
Naokawa, Toyoziro, to Toko, Inc. FM Receiver muting range setting circuit. 4,199,725, Cl. 455-212.000.
Naphtachimie Societe Anonyme: *See—*
Sandis, Stylianos; and Bailly, Jean C., 4,199,474, Cl. 252-429.00B.
National Research Development Corporation: *See—*
Firth, Jack G.; Jones, Alan; Jones, Thomas A.; and Mann, Brenda, 4,198,850, Cl. 73-23.000.
Natori, Kenji; and Masuoka, Fujio, to Tokyo Shibaura Electric Co., Ltd. Semiconductor memory device. 4,199,772, Cl. 357-23.000.
Nauman, Mark R., to Baxter Travenol Laboratories, Inc. Membrane diffusion device with external compression. 4,199,458, Cl. 210-321.00B.
Neale, Ronald G., to Harris Corporation. Amorphous non-volatile ram. 4,199,692, Cl. 307-238.000.
Neely, Homer E., to PPG Industries, Inc. Glass composition. 4,199,364, Cl. 106-50.000.
Neilson, John M. S.: *See—*
Rosnowski, Wojciech; and Neilson, John M. S., 4,199,386, Cl. 148-188.000.
Neis, Donald A.: *See—*
Bing, Valentijn B.; and Neis, Donald A., 4,199,706, Cl. 313-481.000.
Nelle, Gunther; and Ernst, Alfons, to Dr. Johannes Heidenhain GmbH. Fastening apparatus for longitudinal measuring system. 4,198,757, Cl. 33-125.00C.
Nelson, James; Sainato, Robert J.; and Wolf, Tobin. One-piece steerable sled. 4,199,163, Cl. 280-22.000.
Neptune Microfloc, Inc.: *See—*
Hsiung, Andrew K.; and Eaton, George F., 4,199,451, Cl. 210-86.000.

Nestrick, Terry J.; and Stehl, Rudolph H., to Dow Chemical Company, The. Bonded organo-pellicular packings for chromatographic columns. 4,199,330, Cl. 55-67.000.
Neumann, Herwig. Assembly of prefabricated parts for manufacture of benches, tables and the like. 4,199,189, Cl. 297-445.000.
Neumann, Jurgen; and Gumm, Peter, to Hoechst Aktiengesellschaft. Spiral mixing element. 4,199,269, Cl. 366-343.000.
Neustadt, Bernard R.; and Gold, Elijah H., to Schering Corporation. Omega-(4-polyfluoro-2-hydroxy-2-propyl)-2,3,6-substituted-phenoxy and phenylthio)alkanoic acids and compounds related thereto. 4,199,597, Cl. 424-308.000.
New Jersey Zinc Company, The: *See—*
Brand, John R., 4,199,370, Cl. 106-300.000.
Newell, Chester W.: *See—*
Pfost, Robert F.; Seaman, William E.; and Newell, Chester W., 4,199,794, Cl. 360-92.000.
Newell Research Corporation: *See—*
Pfost, Robert F.; Seaman, William E.; and Newell, Chester W., 4,199,794, Cl. 360-92.000.
Newkirk, David D.; and Login, Robert B., to BASF Wyandotte Corporation. Fiber lubricants derived from polyethoxylated and polyoxyalkylated reaction products of an alpha-olefin epoxide and a fatty alcohol. 4,199,647, Cl. 428-394.000.
Newnam, James A.: *See—*
Cooper, John L.; and Newnam, James A., 4,199,642, Cl. 428-288.000.
Niagara Bottle Washer Manufacturing Co.: *See—*
Vamvakas, Michael, 4,199,049, Cl. 198-408.000.
Nickle, Kenneth E. Automatic feeding screwdriver. 4,199,014, Cl. 144-32.00R.
Nicolay, Hugh C., to Harris Corporation. Process for fabrication of fuse and interconnects. 4,198,744, Cl. 29-623.000.
Nielsen, Knud H.; and Carlsen, Poul E. K. Tool for bending metal pipes. 4,198,840, Cl. 72-217.000.
Niemeier, Gerd: *See—*
Conrad, Ulrich; and Niemeier, Gerd, 4,198,948, Cl. 123-196.00R.
Nieminen, Duane A.: *See—*
Nieminen, Sheralyn L.; and Nieminen, Duane A., 4,199,161, Cl. 280-8.000.
Nieminen, Sheralyn L.; and Nieminen, Duane A. Trash cart. 4,199,161, Cl. 280-8.000.
Nigro, Louis V., to Gillette Company, The. Adjustable tampon inserter. 4,198,978, Cl. 128-285.000.
Nihon Denshi Kabushiki Kaisha: *See—*
Namae, Takao, 4,199,681, Cl. 250-311.000.
Niki, Takao: *See—*
Takeshita, Toru; Niki, Takao; Kawashima, Hiroyuki; and Bannai, Kiyoshi, 4,199,577, Cl. 424-236.000.
Nikkiso Co., Ltd.: *See—*
Ikeda, Hiroshi; Ishimaru, Osamu; Nakatake, Teruyoshi; and Sakamoto, Tetsuzo, 4,199,718, Cl. 324-158.0MG.
Nikolaev, Jury N.: *See—*
Evkin, Ivan F.; Olevsky, Viktor M.; Ruchinsky, Vitaly R.; Tatyanchikov, Valentin A.; and Nikolaev, Jury N., 4,199,398, Cl. 159-6.00R.
Nippon Air Brake Co., Ltd., The: *See—*
Teluo, Yambe, 4,199,196, Cl. 303-6.00C.
Nippon Atsudenki Kabushiki Kaisha: *See—*
Ono, Atsushi; Fujino, Shoji; Ozaki, Yukio; and Suzuki, Kentaro, 4,199,721, Cl. 455-77.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Aono, Syunji; and Toyoda, Atsushi, 4,199,641, Cl. 428-213.000.
Nishizawa, Jun-Ichi; and Yoshida, Takashi, 4,199,771, Cl. 357-22.000.
Tachida, Hiroki, 4,199,124, Cl. 248-188.000.
Nippon Jikkou Kabushiki Kaisha: *See—*
Sato, Takeshi; Sakamoto, Isao; Okamoto, Katsuaki; and Tada, Hiroji, 4,198,793, Cl. 52-166.000.
Nippon Kogaku K.K.: *See—*
Goto, Tetsuro; and Hasegawa, Hiroshi, 4,199,236, Cl. 354-50.000.
Nakano, Yoshiyuki, 4,199,243, Cl. 354-173.000.
Nippondenso Co., Ltd.: *See—*
Oishi, Kazuo, 4,198,941, Cl. 123-146.50A.
Nishihama, Hitoshi: *See—*
Matsumoto, Shoji; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,199,356, Cl. 430-126.000.
Nishizawa, Jun-Ichi; and Yoshida, Takashi, to Nippon Gakki Seizo Kabushiki Kaisha. Static induction transistor. 4,199,771, Cl. 357-22.000.
Nissan Motor Company, Limited: *See—*
Fujikawa, Tsuneo; Aoki, Syunichi; and Sasaki, Naoki, 4,198,906, Cl. 101-42.000.
Fukunaga, Yukio; and Kamijo, Ken, 4,199,172, Cl. 280-807.000.
Harada, Masanori, 4,198,938, Cl. 123-119.00A.
Kuroda, Hiroshi; Nakajima, Yasuo; and Hayashi, Yoshimasa, 4,198,942, Cl. 123-148.0DS.
Masaki, Kenji, 4,198,939, Cl. 123-119.0EC.
Nittan Company, Ltd.: *See—*
Tanaka, Hiroshi, 4,199,755, Cl. 340-630.000.
Nittel, Klaus-Dieter: *See—*
Nuss, Karl-Heinz; Nittel, Klaus-Dieter; Oei, Han-Yong; and Siemund, Gunter, 4,199,381, Cl. 148-6.15R.
Nitto Electric Industrial Co., Ltd.: *See—*
Hori, Yutaka; Sunagawa, Makoto; and Matsuoka, Naoki, 4,199,646, Cl. 428-344.000.
Niwa, Takayasu: *See—*
Yasuda, Shinichi; Niwa, Takayasu; and Kurohara, Takayuki, 4,199,470, Cl. 252-184.000.
Nogami, Tomoyuki; and Fujii, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aishin Seiki Kabushiki Kaisha. Sealed fluid reservoir for brake master cylinders. 4,198,824, Cl. 60-535.000.
Nogradi, Katalin: *See—*
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, 4,199,505, Cl. 260-244.400.
Noiles, Douglas G., to United States Surgical Corporation. Drip chamber with air vent. 4,198,971, Cl. 128-214.00C.
Norco, Inc.: *See—*
Metz, Joseph R., 4,198,872, Cl. 74-57.000.
Nordin, Fred W., to Utica Tool Company, Inc. Hand operated cutting tool. 4,198,749, Cl. 30-192.000.
Nordson Corporation: *See—*
Sharpless, John, 4,199,675, Cl. 219-305.000.
Norlin Industries, Inc.: *See—*
Gross, Glenn M., 4,198,892, Cl. 84-1.250.
Norris, Alan H.: *See—*
Chambley, Phillip W.; and Norris, Alan H., 4,198,735, Cl. 28-218.000.
Norris, Philip R., to Polaroid Corporation. Film pack for small format film units. 4,199,240, Cl. 354-86.000.
Northern Telecom Limited: *See—*
Edwards, Gary A., 4,199,697, Cl. 307-352.000.
Northrop Corporation: *See—*
Bouchard, John R., 4,199,329, Cl. 55-17.000.
Nouvertne, Werner: *See—*
Adelmann, Siegfried; Margotte, Dieter; and Nouvertne, Werner, 4,199,540, Cl. 264-22.000.
Novak, Robert M.: *See—*
Hall, John B.; Wiegers, Wilhelmus J.; Hill, Ira D.; Novak, Robert M.; and Schmitt, Frederick L., 4,199,481, Cl. 252-522.00R.
Novex Talalmanyfejleszto Es Ertekesito Kulkereskedelmi Rt: *See—*
Gyarmati, Laszlo; Racz, Istvan; Szentmiklosi, Peter; and Plachy, Janos, 4,199,560, Cl. 424-19.000.
Novi Plastics Company: *See—*
Daniels, Phillip D., 4,198,715, Cl. 4-146.000.
Novosel, Gerald W.; Gilbert, Lawrence A.; Wee, Maria L. S.; and Mueller, Frank J., to Procter & Gamble Company, The. Alkaline dishwasher detergent. 4,199,467, Cl. 252-103.000.
Nuese, Carlos: *See—*
Pasahow, Edward J.; and Nuese, Carlos, 4,199,809, Cl. 364-200.000.
Nuss, Karl-Heinz; Nittel, Klaus-Dieter; Oei, Han-Yong; and Siemund, Gunter, to Oxy Metal Industries Corporation. Preparation of metals for cold forming. 4,199,381, Cl. 148-6.15R.
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, to Kollmorgen Technologies Corporation. Process for sensitizing articles for metallization and resulting articles. 4,199,623, Cl. 427-305.000.
O & K Orenstein & Koppel Aktiengesellschaft: *See—*
Rathje, Uwe; and Lappe, Manfred, 4,199,038, Cl. 180-140.000.
Oda, Shinichi; Tsuchiya, Hiroshi; Matsushita, Takao; and Kuroda, Takio, to Kanzaki Paper Manufacturing Co., Ltd. Process for preparing an acceptor coated sheet for use in a pressure sensitive copying system. 4,199,619, Cl. 427-150.000.
Odermann, Charles R.; and Brown, Jack, to Singer Company, The. Motor control system incorporating digital top speed limiting arrangement. 4,199,712, Cl. 318-345.00E.
Odinokov, Boris P.; Semenikhin, Anatoly Y.; Pakhtusov, Gavriil A.; Pakhtusov, Jury G.; and Sankov, Anatoly E. Method of mining bedded mineral deposits with hydraulic extraction. 4,199,192, Cl. 299-17.000.
Oei, Han-Yong: *See—*
Nuss, Karl-Heinz; Nittel, Klaus-Dieter; Oei, Han-Yong; and Siemund, Gunter, 4,199,381, Cl. 148-6.15R.
Oestreich, Ulrich, to Siemens Aktiengesellschaft. Communication cable utilizing optical transmission elements. 4,199,224, Cl. 350-96.230.
Ogiso, Akira: *See—*
Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, 4,199,519, Cl. 260-413.000.
Ohno, Hideshi: *See—*
Kume, Kazunari; Watanabe, Minoru; Ohno, Hideshi; Tamaru, Munetaka; Machida, Takayasu; Nakamura, Seiichi; and Morokawa, Shigeru, 4,199,699, Cl. 310-49.00R.
Ohrui, Tetsuya; Kato, Michio; Ayano, Masami; Kawaguchi, Tsunejiro; and Abe, Tadashi, to Sumitomo Chemical Company, Limited. Purification of crude acrylic acid. 4,199,410, Cl. 203-49.000.
Ohsawa, Mitsuo, to Sony Corporation. Record player. 4,199,149, Cl. 274-23.00A.
Ohta, Yoshiharu: *See—*
Hosomizu, Hiroshi; and Ohta, Yoshiharu, 4,199,242, Cl. 354-145.000.
Ohtake, Masatoshi; Maeda, Takeshi; and Izumita, Morishi, to Hitachi, Ltd. Random access storage apparatus with a movable recording medium. 4,199,820, Cl. 365-234.000.
Ohtsuka, Sadao; and Yamaguchi, Takaaki, to Mitsubishi Gas Chemical Company Inc. Oxygen absorbent composition. 4,199,472, Cl. 252-427.000.
Oishi, Kazuo, to Nippondenso Co., Ltd. Method for controlling the distribution of spark voltages to engine multiple cylinders. 4,198,941, Cl. 123-146.50A.

Oiwa, Ruiko: *See—*
Omura, Satoshi; Iwai, Yuzuru; Awaya, Juichi; Takahashi, Yoko; and Oiwa, Ruiko, 4,199,514, Cl. 260-343.30R.

Oka, Yoshikazu; Itoh, Katsumi; and Hirata, Minoru, to Takeda Chemical Industries, Ltd. Piperazine containing dihydronaphthalene derivatives and compositions. 4,199,582, Cl. 424-250.000.

Okamoto, Katsuaki: *See—*
Sato, Takeshi; Sakamoto, Isao; Okamoto, Katsuaki; and Tada, Hiroji, 4,198,793, Cl. 52-166.000.

Okawa, Hiroyasu: *See—*
Nakagawa, Takeo; Suzuki, Kiyoshi; and Okawa, Hiroyasu, 4,198,884, Cl. 76-107.00R.

O'Keeffe, Terence W.: *See—*
Patterson, Ralph W.; O'Keeffe, Terence W.; and Adam, John D., 4,199,737, Cl. 333-154.000.

Okuma, Tatsuhiko, to Trio Kabushiki Kaisha. Amplifying circuit. 4,199,732, Cl. 330-267.000.

Okumura, Tadahiko: *See—*
Himeji, Akio; Okumura, Tadahiko; and Kajioka, Yasuo, 4,199,279, Cl. 405-303.000.

Okuno, Youichi: *See—*
Uchiyama, Takashi; Suzuki, Ryoichi; Ito, Fumio; Nagasaka, Wataru; Okuno, Youichi; and Matsuda, Mutsuhide, 4,199,239, Cl. 354-86.000.

Oldham, Joel S.; and Landerville, Timothy L., to Smith International, Inc. Sealing ring for drilling tool cutters. 4,199,156, Cl. 277-92.000.

Olevsky, Viktor M.: *See—*
Evkin, Ivan F.; Olevsky, Viktor M.; Ruchinsky, Vitaly R.; Tatyanchikov, Valentin A.; and Nikolaev, Jury N., 4,199,398, Cl. 159-6.00R.

Ollivier, Jean: *See—*
Combette, Marc; and Ollivier, Jean, 4,199,093, Cl. 227-9.000.

Olodort, Robert A. Optical rectification apparatus. 4,199,232, Cl. 352-113.000.

Oloff, Clarence M.; Buehring, Willi J.; and Greenlees, Kevin J., to United States of America, Air Force. Microsphere loading device. 4,199,079, Cl. 222-1.000.

Olsen, Everett O., to Foxboro Company, The. Temperature compensating means for pressure measuring apparatus. 4,198,867, Cl. 73-704.000.

Olson, Donald; and Georges, Richard P., to Olson Irrigation Systems. Low volume spray device for surface irrigation system. 4,199,105, Cl. 239-498.000.

Olson Irrigation Systems: *See—*
Olson, Donald; and Georges, Richard P., 4,199,105, Cl. 239-498.000.

Olund, Sven A., to Chevron Research Company. Refrigeration oil containing wear-inhibiting amounts of an aryl phosphate-fatty acid combination. 4,199,461, Cl. 252-49.800.

Olympus Optical Co., Ltd.: *See—*
Hayashi, Yoshiaka; and Nakamura, Kazuhiko, 4,199,428, Cl. 204-299.00R.
Kondo, Shiro, 4,199,724, Cl. 455-344.000.
Otani, Yutaka, 4,198,959, Cl. 128-5.000.
Satoh, Ken; and Yanagida, Tuneo, 4,199,792, Cl. 360-74.100.
Utsugi, Mikio, 4,198,958, Cl. 128-5.000.
Utsugi, Mikio, 4,198,960, Cl. 128-6.000.

Omnicomp, Inc.: *See—*
Rose, Stanley E., 4,199,092, Cl. 226-181.000.

Omura, Sadafumi: *See—*
Yamagishi, Michio; Mizoue, Kazutoshi; Mizutani, Taku; Hara, Hiroshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,199,515, Cl. 260-345.70R.

Omura, Satoshi; Iwai, Yuzuru; Awaya, Juichi; Takahashi, Yoko; and Oiwa, Ruiko, to Kitasato Institute, The. Compound, frenolicin B which is useful as an antibiotic. 4,199,514, Cl. 260-343.30R.

Ondetti, Miguel A.; and Cushman, David W., to E. R. Squibb & Sons, Inc. Compounds for alleviating hypertension. 4,199,512, Cl. 260-326.12R.

Ono, Atsushi; Fujino, Shoji; Ozaki, Yukio; and Suzuki, Kentaro, to Nippon Atsudenki Kabushiki Kaisha. Hand-held microphone for transceiver. 4,199,721, Cl. 455-77.000.

Ono, Junji: *See—*
Kojimoto, Susumu; Sato, Takami; Ono, Junji; Mori, Toshio; and Suzuki, Shigeharu, 4,199,106, Cl. 239-542.000.

Opalka, Chester J., Jr.: *See—*
Lesher, George Y.; and Opalka, Chester J., Jr., 4,199,586, Cl. 424-263.000.

Orea Mateo, Fernando. Device for fixing heels. 4,198,770, Cl. 36-42.000.

Oreco III, Inc.: *See—*
Evans, Orde R.; Rhodes, William D.; and Trahan, Joseph O., 4,198,919, Cl. 114-219.000.

Orii, Toshio, to Sanyo Electric Co., Ltd. Video/intercarrier sound detecting circuit in television receiver. 4,199,786, Cl. 358-197.000.

Ornsteen Chemicals, Inc.: *See—*
Ornsteen, Robert L., 4,199,082, Cl. 222-146.0HE.

Ornsteen, Robert L., to Ornsteen Chemicals, Inc. Hot melt adhesive gun. 4,199,082, Cl. 222-146.0HE.

Orogil: *See—*
Soula, Gerard; and Lefevre, Jean-Paul, 4,199,462, Cl. 252-51.50A.

Osborn, Richard D. Security nut and hook assembly. 4,199,127, Cl. 248-552.000.

Oshima, Masanao; Komoto, Mikihisa; Yabuki, Shoichi; and Inokawa, Tsuneo, to Mitsui Engineering and Shipbuilding Co., Ltd. Ice-breaking means for ships. 4,198,917, Cl. 114-42.000.

Osman, John M.; and Martin, Michael P., to Rolls-Royce Limited. Inspection apparatus. 4,198,852, Cl. 73-37.000.

Ossenberg-Franzes, Friedrich: *See—*
Gottzein, Eveline; Ossenberg-Franzes, Friedrich; and Roche, Christian, 4,198,910, Cl. 104-281.000.

Ostenso, Allen L.; and Johnson, Charles B., to General Electric Company. Supervisory circuit for redundant channel control systems. 4,199,799, Cl. 361-78.000.

Otake, Noboru: *See—*
Yamagishi, Michio; Mizoue, Kazutoshi; Mizutani, Taku; Hara, Hiroshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,199,515, Cl. 260-345.70R.

Otani, Yutaka, to Olympus Optical Co., Ltd. Sealing device for an endoscope guide wire assembly. 4,198,959, Cl. 128-5.000.

Otis Engineering Corporation: *See—*
Boski, Israel; Tunstall, Karl N.; and Warren, M. L., 4,199,131, Cl. 251-62.000.

Otsuki, Akira: *See—*
Kokumai, Jun; Otsuki, Akira; and Ishibashi, Tadashi, 4,199,622, Cl. 427-239.000.

Owen, Peter W.: *See—*
Roth, Harold H.; Owen, Peter W.; and Chiu, Thomas T., 4,199,561, Cl. 424-32.000.

Owens-Illinois, Inc.: *See—*
Mumford, Eustace H.; and Perry, Jack I., 4,199,344, Cl. 65-260.000.

Oxy Metal Industries Corporation: *See—*
Freeman, Dennis B.; and Prosser, John L., 4,199,488, Cl. 260-29.6MP.
Nuss, Karl-Heinz; Nittel, Klaus-Dieter; Oei, Han-Yong; and Siemund, Gunter, 4,199,381, Cl. 148-6.15R.

Ozaki, Yukio: *See—*
Ono, Atsushi; Fujino, Shoji; Ozaki, Yukio; and Suzuki, Kentaro, 4,199,721, Cl. 455-77.000.

Ozasa, Susumu, to Hitachi, Ltd. Apparatus for electron beam lithography. 4,199,688, Cl. 250-492.00A.

Packard Instrument Company, Inc.: *See—*
Reich, Andrew R.; and Everett, Leroy J., 4,199,013, Cl. 141-130.000.

Pagel, Ernst O.; and Borst, Wolfgang, to Robert Bosch GmbH. System to control the on-off time of a pulse train of variable frequency, particularly the dwell time of ignition signals for an internal combustion engine. 4,198,936, Cl. 123-117.00R.

Pakhtusov, Gavriil A.: *See—*
Odinokov, Boris P.; Semenikhin, Anatoly Y.; Pakhtusov, Gavriil A.; Pakhtusov, Jury G.; and Sankov, Anatoly E., 4,199,192, Cl. 299-17.000.

Pakhtusov, Jury G.: *See—*
Odinokov, Boris P.; Semenikhin, Anatoly Y.; Pakhtusov, Gavriil A.; Pakhtusov, Jury G.; and Sankov, Anatoly E., 4,199,192, Cl. 299-17.000.

Palfey, Albert J.; and Hovey, William P., to Dow Chemical Company, The. Method of making curved laminated panels. 4,199,389, Cl. 156-196.000.

Palladino, Nicola: *See—*
Mantovani, Elvio; Palladino, Nicola; and Zanobi, Antonio, 4,199,478, Cl. 252-455.00Z.

Palmer, Ansell W.: *See—*
Germer, Warren R.; and Palmer, Ansell W., 4,199,717, Cl. 324-116.000.

Palosi, Eva: *See—*
Matolcsy, Gyorgy; Bartok nee Berencsy, Piroska; Kiss, Bela; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo, 4,199,598, Cl. 424-315.000.

Panaris, Rene: *See—*
Dulout, Charles; Peyrouset, Andre; Panaris, Rene; Hannoun, Claude; and Vincent, Jean, 4,199,450, Cl. 210-31.00C.

Papachristou, Dimitrios: *See—*
Fortner, Joseph G.; and Papachristou, Dimitrios, 4,198,982, Cl. 128-334.00C.

Pappa, Rosario: *See—*
Zappelli, Piergiorgio; Rossodivita, Antonio; Pappa, Rosario; and Re, Luciano, 4,199,498, Cl. 260-112.50R.

Paprotny, Peter: *See—*
Streck, Fritz; Paprotny, Peter; and Brager, Gerhard, 4,199,294, Cl. 414-739.000.

Pareja, Ramon, to Lear Siegler, Inc. Hydraulic Gerotor motor with balancing grooves and seal pressure relief. 4,199,305, Cl. 417-440.000.

Parent, Edward D.; and McDonough, Thomas B., to GTE Sylvania Incorporated. Electrically conductive boat for vacuum evaporation of metals. 4,199,480, Cl. 252-516.000.

Paris Manufacturing Company, Inc.: *See—*
Sanko, John R., 4,199,088, Cl. 223-67.000.

Parker, Donald L.: *See—*
Mathues, Thomas P.; and Parker, Donald L., 4,198,823, Cl. 60-547.00R.

Parker Industries, Inc.: *See—*
Rohrer, John D., 4,199,075, Cl. 220-334.000.

Parker, Roy B., to Albany International Corp. Fabric faced laminate panel and method of manufacture. 4,199,635, Cl. 428-95.000.

Parks-Cramer Company: *See—*
Powell, Benjamin S., Jr., 4,198,726, Cl. 15-312.00A.

Parsons, Robert C. Method of making decorative panels. 4,199,358, Cl. 430-308.000.

Parzych, Joseph F., to Dynamics Corporation of America. Food processor. 4,199,268, Cl. 366-306.000.

Pasahow, Edward J.; and Nuese, Carlos, to United States of America, Navy. Programmable data terminal set. 4,199,809, Cl. 364-200.000.

Pascal, Pierre B.: *See—*
Lamic, Jackie G.; Pascal, Pierre B.; Schilling, Michel E.; and Zante, Hubert A., 4,198,896, Cl. 89-1.818.

Passavant Corporation: *See—*
McCawley, Robert; and Siddle, Kenneth R., 4,199,453, Cl. 210-160.000.

Pastukhov, Valery V.: *See—*
Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Matveev, Vladimir A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; Mebel, Vladimir S.; Pravednikov, Erik V.; Rabinovich, Efim M.; and Ushakov, Valery K., 4,198,841, Cl. 72-224.000.

Pat-N-Mac, Inc.: *See—*
Patriarca, William C.; and McGraw, Leonard J., 4,198,918, Cl. 114-197.000.

Patriarca, William C.; and McGraw, Leonard J., to Pat-N-Mac, Inc. Semi-automatic bailer plug. 4,198,918, Cl. 114-197.000.

Patterson, Ralph W.; O'Keeffe, Terence W.; and Adam, John D., to Westinghouse Electric Corp. Magnetostatic wave device. 4,199,737, Cl. 333-154.000.

Patterson, Raymond B., III, to Harris Corporation. CMOS Voltage multiplier. 4,199,806, Cl. 363-60.000.

Paukune, Arthur J., to United States of America, Air Force. Ribbed flange modified seal. 4,199,175, Cl. 285-405.000.

Paul, Steven W., to Dunham-Bush, Inc. Temperature control system. 4,199,102, Cl. 236-91.00G.

Pauli, Ernest H., to Hilliard Corporation, The. Flexible drive coupling. 4,198,832, Cl. 64-9.00R.

Pavlov, Evgeny N.: *See—*
Danilin, Jury I.; Maringulov, Konstantin A.; and Pavlov, Evgeny N., 4,199,818, Cl. 365-70.000.

Pawlaczyk, Ronald J. Hand operated tube crimping apparatus. 4,198,842, Cl. 72-307.000.

Paz, Israel. Tri-state delta modulator. 4,199,722, Cl. 375-27.000.

Pearce, Warren, Jr.; and Ramsey, Charles W., to General Motors Corporation. Fused electrical connector. 4,199,214, Cl. 339-147.00P.

Pearson, Torgny, to SKF Nova AB. Outer race ring centered retainer for rolling bearings. 4,199,203, Cl. 308-213.000.

Pekarcik, John T.; and Mazur, Richard J., to Westinghouse Air Brake Company. Dynamic/friction brake blending control system. 4,199,195, Cl. 303-3.000.

Penco, Sergio; Gozzi, Fausto; Angelucci, Francesco; and Arcamone, Federico, to Farmitalia Cario Erba S.p.A. Substituted anthracyclines, their preparation and use. 4,199,571, Cl. 424-180.000.

Penicaud, Etienne: *See—*
Durand, Jean-Michel; and Penicaud, Etienne, 4,199,729, Cl. 328-151.000.

Peniston, Quintin P.; and Johnson, Edwin L. Process for the recovery of chemicals from the shells of crustacea. 4,199,496, Cl. 260-112.00R.

Perkin-Elmer Corporation, The: *See—*
deMey, Charles F., II, 4,199,132, Cl. 251-134.000.

Perry, Eli: *See—*
Chiang, Robert; and Perry, Eli, 4,199,445, Cl. 210-23.00R.

Perry, Jack I.: *See—*
Mumford, Eustace H.; and Perry, Jack I., 4,199,344, Cl. 65-260.000.

Perry, LaRelle T. Drill jig. 4,199,283, Cl. 408-115.00R.

Peterson, Robert S., to Westinghouse Electric Corp. Inverse timer with non-interacting potentiometer settings. 4,199,808, Cl. 364-117.000.

Peterson, Wayne A., to Caterpillar Tractor Co. High pressure implement circuit for loader with slow and fast dump position. 4,199,293, Cl. 414-699.000.

Peterson, Wesley R.; Sedlatschek, Robert; Transue, James A.; and Totino, Peter J., to Singer Company, The. Vacuum-type pneumatic needle threading assist. 4,198,915, Cl. 112-225.000.

Petiot, Michel, to Regie Nationale des Usines Renault. Installation for treatment of sediments coming from stations for purification of industrial waste water. 4,198,914, Cl. 110-238.000.

Petitto, Angelo A.: *See—*
Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., 4,199,299, Cl. 414-687.000.

Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., to Petitto Mine Equipment Repair, Inc. Material handling apparatus for use in a mine. 4,199,299, Cl. 414-687.000.

Petitto, James L.: *See—*
Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., 4,199,299, Cl. 414-687.000.

Petitto Mine Equipment Repair, Inc.: *See—*
Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., 4,199,299, Cl. 414-687.000.

Petrella, Joseph R., to PPG Industries, Inc. Glass lift mechanism for and method of press bending glass sheets. 4,199,341, Cl. 65-104.000.

Petty, Walter L., to Shell Oil Company. Removal of ketene impurities in the preparation of alpha-cyano-aryloxybenzyl alcohols. 4,199,527, Cl. 260-465.00D.

Pews, R. Garth: *See—*
Mixan, Craig E.; and Pews, R. Garth, 4,199,581, Cl. 424-250.000.

Peyrouset, Andre: *See—*
Dulout, Charles; Peyrouset, Andre; Panaris, Rene; Hannoun, Claude; and Vincent, Jean, 4,199,450, Cl. 210-31.00C.

Pfeifer, Wolfgang: *See—*
Eyermann, Manfred; and Pfeifer, Wolfgang, 4,198,945, Cl. 123-179.00B.

Pfost, Robert F.; Seaman, William E.; and Newell, Chester W., to Newell Research Corporation. Dual tape transport system with tensioning means. 4,199,794, Cl. 360-92.000.

Pharmachem Corporation: *See—*
Herb, John R., 4,198,972, Cl. 128-214.00D.

Philip Morris Incorporated: *See—*
Washington, James M.; Crowther, Gerald H.; and Gaudlitz, Robert T., 4,198,854, Cl. 73-38.000.

Phillips, Chester C. Heat demand regulator. 4,199,023, Cl. 165-12.000.

Phillips Petroleum Company: *See—*
Blackwell, Jennings P.; and Tieszen, Dale O., 4,199,321, Cl. 8-168.00R.
Blore, James H., 4,199,633, Cl. 428-91.000.
King, William R., 4,198,860, Cl. 73-195.000.
Platt, Louis, 4,199,644, Cl. 428-300.000.
Skraba, Frank W., 4,199,409, Cl. 203-39.000.
Welch, M. Bruce; and Fahey, Darryl R., 4,199,475, Cl. 252-429.00C.

Phillips, Robert E. Testing apparatus for dispensing a fluid. 4,199,543, Cl. 422-63.000.

Phipps, Arthur L., to Condec Corporation. Extrusion apparatus. 4,199,310, Cl. 425-71.000.

Photis, James M., to Stauffer Chemical Company. Alkoxymethylbenzophenones as photoinitiators for photopolymerizable compositions and process based thereon. 4,199,420, Cl. 204-159.150.

Pickard, Jurgen, to Daimler-Benz Aktiengesellschaft. Primary pump drive for automatic motor vehicle transmissions. 4,198,818, Cl. 60-330.000.

Pickin, George A.: *See—*
Wood, Jonathan R.; Pickin, George A.; and Harvey, David S., 4,199,349, Cl. 75-29.000.

Pierburg GmbH & Co., KG: *See—*
Kuhlen, Ernst, 4,199,535, Cl. 261-34.00A.

Piguet, Christian, to Centre Electronique Horloger SA. Device for the input of alphanumerical data for apparatus of small size. 4,199,751, Cl. 340-365.00S.

Pilgram, Kurt H. G.; and Skiles, Richard D., to Shell Oil Company. Cycloalkanecarboxanilide derivative herbicides. 4,199,347, Cl. 71-118.000.

Pilkington P. E. Limited: *See—*
Rogers, Philip J., 4,199,217, Cl. 350-1.200.

Pilny, Richard J.; and Regulski, Thomas W., to Dow Chemical Company, The. Rendering porous structures impermeable by treatment with pH insensitive gelable compositions of amide polymers. 4,199,625, Cl. 427-385.500.

Pilot Unit Products, Inc.: *See—*
Rubin, Isadore E., 4,198,862, Cl. 73-421.00B.

Pittman, Robert B., to Industrial Electronic Hardware Corp. Tube socket with novel grounding means for high voltage terminals. 4,199,215, Cl. 339-192.00T.

Plachy, Janos: *See—*
Gyarmati, Laszlo; Racz, Istvan; Szentmiklosi, Peter; and Plachy, Janos, 4,199,560, Cl. 424-19.000.

Plank, Charles J.; Rosinski, Edward J.; and Rubin, Mae K., to Mobil Oil Corporation. Method for producing zeolites. 4,199,556, Cl. 423-329.000.

Plantard, Dominique: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,199,338, Cl. 65-16.000.

Plantureux, Jean, to Faiveley S.A., a part interest. Track brake for railways. 4,198,909, Cl. 104-26.00A.

Plasmainvent AG: *See—*
Houben, Johan M., 4,199,104, Cl. 239-81.000.

Platt, Louis, to Phillips Petroleum Company. Method for the production of a needled nonwoven fabric. 4,199,644, Cl. 428-300.000.

Plummer, James D., to Leland Stanford Junior University, The Board of Trustees of the. Monolithic semiconductor switching device. 4,199,774, Cl. 357-41.000.

Points, Warren D. Insertable hitch for tractors. 4,199,167, Cl. 280-415.00A.

Polaroid Corporation: *See—*
Andrews, Paul A., 4,199,391, Cl. 156-324.400.
Muggli, Juerg, 4,199,246, Cl. 354-195.000.
Norris, Philip R., 4,199,240, Cl. 354-86.000.
Savage, Thomas J., 4,199,237, Cl. 354-60.00E.
Scholz, Donald T., 4,199,233, Cl. 352-194.000.
Shenk, Edwin K., 4,199,244, Cl. 354-195.000.

Pole, Ernest G.; and Graham, Everett S., to Polysar Limited. Methods of making sound insulation moldable carpets. 4,199,634, Cl. 428-95.000.

Polhemus, John T.: *See—*
United States of America, National Aeronautics and Space Administration; Cash, Wilbur H., Jr.; and Polhemus, John T., 4,198,988, Cl. 128-666.000.

Polichette, Joseph: *See—*
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,199,623, Cl. 427-305.000.

Pollard, Stephen L. Embossing and laminating process. 4,199,390, Cl. 156-209.000.

Polysar Limited: *See—*
Pole, Ernest G.; and Graham, Everett S., 4,199,634, Cl. 428-95.000.

Pommer, Ernst-Heinrich: *See—*
Rentzea, Costin; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,199,503, Cl. 260-146.00R.

Ponthus, Andre: *See—*
Mercier, Jacques; and Ponthus, Andre, 4,198,828, Cl. 62-55.000.

Popma, Theo J. A.; and Kamminga-Schrijnemakers, Maria G. J., to U.S. Philips Corporation. Method of producing iron oxide photo masks. 4,199,621, Cl. 427-160.000.

Popow, Anatoliy. Riddle with locked-in screen. 4,199,442, Cl. 209-408.000.
Powell, Benjamin S., Jr., to Parks-Cramer Company. Traveling pneumatic cleaner filter. 4,198,726, Cl. 15-312.00A.
Power, Dean V., to Terra Tek, Inc. Solar illuminated energy conserving greenhouse. 4,198,953, Cl. 126-428.000.
PPG Industries, Inc.: *See*—
Neely, Homer E., 4,199,364, Cl. 106-50.000.
Petrella, Joseph R., 4,199,341, Cl. 65-104.000.
Prakash, Ravinder: *See*—
Dosch, Thomas J.; and Prakash, Ravinder, 4,199,257, Cl. 356-252.000.
Pratt, Harry H.; and Cranstoun, David, to Foster Wheeler Energy Corporation. Gas screen arrangement for a vapor generator. 4,198,930, Cl. 122-235.00C.
Pravednikov, Erik V.: *See*—
Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Matveev, Vladimir A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; Mebel, Vladimir S.; Pravednikov, Erik V.; Rabinovich, Efim M.; and Ushakov, Valery K., 4,198,841, Cl. 72-224.000.
Precision Handling Devices, Inc.: *See*—
Hubbard, Leo J., 4,199,091, Cl. 226-74.000.
Prefontaine, Claude: *See*—
Keable, Denis; and Prefontaine, Claude, 4,198,996, Cl. 135-1.00A.
Premier Drum Company Limited, The: *See*—
Della-Porta, Clifford A.; and Spenlove-Spenlove, Peter J. F. B., 4,198,894, Cl. 84-422.00R.
Press-Seal Gasket Corporation: *See*—
Skinner, Harry W.; and Deeb, Fouad M., 4,199,157, Cl. 277-190.000.
Preux, Roger. Measuring system. 4,198,857, Cl. 73-141.00R.
Prevedello, Aldo; and Brunelli, Maurizio, to Anic, S.p.A. 2-Methyl-2-cyanomethyl-5-isopropyl tetrahydrofuran. 4,199,516, Cl. 260-346.110.
Prevender, Thomas S., to United States of America, Energy. Method for forming or bonding a liner. 4,198,740, Cl. 29-421.00R.
Prevost, Henri: *See*—
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Prikhodko, Valery V.: *See*—
Kachkarov, Alexandr G.; Rozhansky, Sergei B.; Golovakhina, Valentina A.; and Prikhodko, Valery V., 4,198,995, Cl. 134-133.000.
Process Evaluation & Development Corp.: *See*—
Villavicencio, Eduardo J., 4,199,399, Cl. 162-85.000.
Procter & Gamble Company, The: *See*—
Barford, Brian D.; Gilbert, Lawrence A.; Staab, Robert A.; Collins, Royal D.; and Ries, Charles R., 4,199,468, Cl. 252-103.000.
Cambre, Cushman M., 4,199,464, Cl. 252-91.000.
Drobish, James L.; and Gougeon, Thomas W., 4,198,976, Cl. 128-260.000.
Hughes, Donald L.; Doty, Jack A.; and Vinson, Charles B., 4,199,610, Cl. 426-590.000.
Jones, Kenneth L., 4,199,483, Cl. 252-559.000.
Novosel, Gerald W.; Gilbert, Lawrence A.; Wee, Maria L. S.; and Mueller, Frank J., 4,199,467, Cl. 252-103.000.
Reller, Herbert H.; and Kretschmar, Herbert C., 4,199,576, Cl. 424-230.000.
Rodriguez, Victor F., 4,199,465, Cl. 252-91.000.
Proektno-Konstruktorskoe Bjuro Elektrogidravliki Akademii Nauk Ukrainskoi SSR: *See*—
Kachkarov, Alexandr G.; Rozhansky, Sergei B.; Golovakhina, Valentina A.; and Prikhodko, Valery V., 4,198,995, Cl. 134-133.000.
Pross, Wilhelm: *See*—
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Prosser, John L.: *See*—
Freeman, Dennis B.; and Prosser, John L., 4,199,488, Cl. 260-29.6MP.
Pruett, Roy L.: *See*—
Kaplan, Leonard; and Pruett, Roy L., 4,199,521, Cl. 260-449.00L.
Przetak, Edwin J.: *See*—
McGuth, Joseph C.; and Przetak, Edwin J., 4,199,010, Cl. 138-140.000.
Ptasinski, Leo D.: *See*—
Ferguson, Bruce A.; Ptasinski, Leo D.; and Schulz, Harvey E., 4,198,733, Cl. 24-113.00R.
Pullman Incorporated: *See*—
Marulic, Walter J.; and Gutridge, Jack E., 4,198,785, Cl. 49-304.000.
Puri, Arun; and Mullooly, John F., to Combustion Engineering, Inc. Seismic core shroud. 4,199,403, Cl. 176-61.000.
Pyatakov, Viktor G.: *See*—
Levinsky, Boris V.; Pyatakov, Viktor G.; Medunin, Andrei A.; and Moskvitin, Vladimir A., 4,199,547, Cl. 422-133.000.
Quantel Limited: *See*—
Taylor, Richard J., 4,199,780, Cl. 358-8.000.
Quick, Graeme R.; and Mills, William M., to White Motor Corporation of Canada Limited. Cutterbar for a crop harvesting machine. 4,198,803, Cl. 56-296.000.
Quis, Peter: *See*—
Boessler, Hans; Quis, Peter; Buechse, Joachim; and Rauch, Hubert, 4,199,486, Cl. 260-31.80M.
Rabinovich, Efim M.: *See*—
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Rabinow, Jacob, to Hall & Myers. Sound or vibration operated flash synchronizer for camera. 4,199,241, Cl. 354-129.000.
Racal Group Services Limited: *See*—
Munday, Peter J., 4,199,821, Cl. 375-60.000.
Racz, Istvan: *See*—
Gyarmati, Laszlo; Racz, Istvan; Szentmiklosi, Peter; and Plachy, Janos, 4,199,560, Cl. 424-19.000.
Raddi, William J.: *See*—
Johnson, Robert W.; and Raddi, William J., 4,199,754, Cl. 340-577.000.
Rado, Theodore A., to Kerr-McGee Corporation. Process for the production of synthetic rutile. 4,199,552, Cl. 423-83.000.
Raffy, Pierre M.; Andre, Pierre A.; Girault, Jean-Pierre Y. B.; Richter, Gerhard; and Thevenin, Jean-Claude P. H. P., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Method and device for reducing the noise of turbo-machines. 4,199,295, Cl. 415-115.000.
Ramer, Robert; and Soldner, Rudolf, to Siemens Aktiengesellschaft. Method for the production of a solid electrolytic capacitor. 4,198,742, Cl. 29-570.000.
Ramirez, Edward. Toilet tissue storage container. 4,199,078, Cl. 221-309.000.
Ramsey, Charles W.: *See*—
Pearce, Warren, Jr.; and Ramsey, Charles W., 4,199,214, Cl. 339-147.00P.
Rance, Michael J.; Handa, Balraj K.; and Morgan, Barry A., to Reckitt & Colman Products Limited. Tetrapeptide amides. 4,199,568, Cl. 424-177.000.
Randall, Bryce E.: *See*—
Cheale, Daniel; Randall, Bryce E.; and Martin, Eric T., 4,198,904, Cl. 100-45.000.
Randall, George C. W., to BP Chemicals Limited. Foundry compositions containing propylene glycol monoacetate. 4,199,365, Cl. 106-84.000.
Raniwala, Subodh K.: *See*—
Dwivedi, Basant K.; and Raniwala, Subodh K., 4,199,373, Cl. 127-60.000.
Dwivedi, Basant K.; and Raniwala, Subodh K., 4,199,374, Cl. 127-60.000.
Rankin, Billy F., to Burton, Parsons & Company, Inc. Method for imparting freeze stability to chlorhexidine-containing medicaments. 4,199,567, Cl. 424-173.000.
Rapp, Edward J.; and Johnson, Glen A., to Digitcom, Inc. Computer numerical control machine tool. 4,199,814, Cl. 364-474.000.
Rassey, Louis J. Rotary valve construction for an internal combustion engine. 4,198,946, Cl. 123-190.00E.
Rassey, Louis J. Modular engine construction. 4,198,947, Cl. 123-55.00R.
Ratajski, Michel P., to Montres Rado S.A. Watertight watchcase having a removable polygonal hard glass. 4,198,811, Cl. 368-292.000.
Rathje, Uwe; and Lappe, Manfred, to O & K Orenstein & Koppel Aktiengesellschaft. Steering gear with steering drop arm. 4,199,038, Cl. 180-140.000.
Rauch, Hubert: *See*—
Boessler, Hans; Quis, Peter; Buechse, Joachim; and Rauch, Hubert, 4,199,486, Cl. 260-31.80M.
Rauleder, Gebhard: *See*—
Mues, Volker; Behrenz, Wolfgang; Rauleder, Gebhard; and Waldmann, Helmut, 4,199,593, Cl. 424-282.000.
RCA Corporation: *See*—
Ahmed, Adel A. A., 4,199,776, Cl. 357-46.000.
Anderson, Charles H.; and Cosentino, Louis S., 4,199,705, Cl. 313-422.000.
Angle, Rodney L., 4,199,691, Cl. 307-221.00D.
Craft, Jack, 4,199,787, Cl. 358-197.000.
Goodman, Alvin M.; and Weitzel, Charles E., 4,199,773, Cl. 357-23.000.
Hsu, Sheng T., 4,199,384, Cl. 148-174.000.
Keneman, Scott A., 4,199,702, Cl. 313-105.00R.
Rosnowski, Wojciech; and Neilson, John M. S., 4,199,386, Cl. 148-188.000.
Schade, Otto H., Jr., 4,199,733, Cl. 330-277.000.
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Reckitt & Colman Products Limited: *See*—
Rance, Michael J.; Handa, Balraj K.; and Morgan, Barry A., 4,199,568, Cl. 424-177.000.
Reddy, Junuthula N.; and Flagg, Gerald K., to Bendix Corporation, The. Anti-flood circuit for use with an electronic fuel injection system. 4,198,932, Cl. 123-32.0EG.
Reed, Edward D.: *See*—
Chadwick, Curt H.; and Reed, Edward D., 4,199,735, Cl. 331-94.50P.
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Petiot, Michel, 4,198,914, Cl. 110-238.000.
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Reick, Franklin G., to Ebert, Michael, a part interest. Toys and games using super-hydrophobic surfaces. 4,199,142, Cl. 273-109.000.
Reid, Lawrence G., Sr., to Carolon Company. Elastic stocking with circumferentially adjustable upper thigh. 4,198,834, Cl. 66-172.00E.
Reindel, John. Microwave hazard alarm. 4,199,716, Cl. 324-95.000.
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De Jong, Feike; and Reinhoudt, David N., 4,199,513, Cl. 260-338.000.
Reller, Herbert H.; and Kretschmar, Herbert C., to Procter & Gamble Company, The. Analgesic and anti-inflammatory compositions for topical application. 4,199,576, Cl. 424-230.000.
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Renner, Heinz, to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H. Microphone having means for suppressing structure-borne sounds. 4,199,667, Cl. 179-121.00R.
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Hadaway, Bernard M., 4,198,787, Cl. 51-231.000.
Reuter, Rene F.; and Welter, Thomas N. H., to Goodyear Tire & Rubber Company, The. Travellers for twisting machines. 4,198,806, Cl. 57-125.000.
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Schoenick, Ralph R., 4,198,814, Cl. 59-84.000.
Reynes, Daniel F.: *See—*
Grange, Jean-Claude C.; Hernandez, Philippe; Reynes, Daniel F.; Suzzoni, Jean-Pierre L.; and Tu, Nghiem H., 4,199,664, Cl. 179-18.0FA.
Rheinmetall GmbH: *See—*
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Rhone-Poulenc Industries: *See—*
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Rich Products Corporation: *See—*
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Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,199,605, Cl. 426-330.600.
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Matolcsy, Gyorgy; Bartok nee Berencsy, Piroska; Kiss, Bela; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo, 4,199,598, Cl. 424-315.000.
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, 4,199,505, Cl. 260-244.400.
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Raffy, Pierre M.; Andre, Pierre A.; Girault, Jean-Pierre Y. B.; Richter, Gerhard; and Thevenin, Jean-Claude P. H. P., 4,199,295, Cl. 415-115.000.
Richter, Hans, to H. A. Schlatter AG. Angle coder having sprocket driven endless code tapes for determining the angular position of a rotatable shaft. 4,199,749, Cl. 340-347.00P.
Ridgway, Peter C.; and Case, Derek F., to Data Recording Instrument Company Limited. Magnetic material. 4,199,382, Cl. 148-120.000.
Riedl, Franz, to Wacker Werke GmbH & Co KG. Device for sealing V-belt and pulley in plate jarring devices. 4,199,271, Cl. 404-113.000.
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Barford, Brian D.; Gilbert, Lawrence A.; Staab, Robert A.; Collins, Royal D.; and Ries, Charles R., 4,199,468, Cl. 252-103.000.
Rieth, Kurt A.; and Bert, Stephen F., to Textron, Inc. Adjustable clasp construction for bracelets and the like. 4,198,732, Cl. 24-78.000.
Rigon, Pietro L., to Rigon, S.P.A. Boots of injection molded plastic. 4,198,769, Cl. 36-24.500.
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Ringle, Louis A.: *See—*
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Rittler, Hermann L., to Corning Glass Works. Method for making basalt glass ceramic fibers. 4,199,336, Cl. 65-2.000.
Rivoallan, Loic A.; and Favre, Francois P. Electro-optic thin-film waveguide modulator device. 4,199,221, Cl. 350-96.140.
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Cribb, William E.; and Roach, Robert J., 4,199,262, Cl. 366-44.000.
Roach, Thomas L.: *See—*
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Robert Bosch GmbH: *See—*
Eyermann, Manfred; and Pfeifer, Wolfgang, 4,198,945, Cl. 123-179.00B.
Kiencke, Uwe; and Zechnall, Martin, 4,198,882, Cl. 74-866.000.
Klotzner, Winfried; Daumer, Rolf; Zechnall, Martin; Kiencke, Uwe; and Flaig, Ulrich, 4,199,812, Cl. 364-431.000.
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Sieber, Albrecht; Schulzke, Peter; and Werner, Peter, 4,198,933, Cl. 123-32.0EA.
Uebel, Philipp, 4,199,264, Cl. 366-123.000.
Worz, Paul, 4,198,943, Cl. 123-148.00D.
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Eads, Harold O.; and Robison, James W., 4,199,016, Cl. 145-2.00R.
Roche, Christian: *See—*
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Rockwell International Corporation: *See—*
Catterfeld, Fritz C., 4,199,152, Cl. 277-3.000.
Cummings, Forest M.; and Sellmeyer, Jack S., 4,199,723, Cl. 455-108.000.
Eshghy, Siavash, 4,198,737, Cl. 29-240.000.
Gunckel, Thomas L., II; and Irvine, John S., 4,199,810, Cl. 364-200.000.
Runyan, Wesley G., 4,198,868, Cl. 73-708.000.
Rodel, Inc.: *See—*
Budinger, William D.; Keen, James L.; and Kellner, Joseph D., 4,198,739, Cl. 29-132.000.
Rodriguez, Victor F., to Procter & Gamble Company, The. Laundry detergent substrate articles. 4,199,465, Cl. 252-91.000.
Rody, Jean: *See—*
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Rogers, Philip J., to Pilkington P. E. Limited. Infra-red optical systems. 4,199,217, Cl. 350-1.200.
Rogovin, Zakhar A.; Morin, Boris P.; and Lishevskaya, Marina O. Method of producing graft copolymers of cellulose with vinylpyridines. 4,199,485, Cl. 260-17.4GC.
Rohm GmbH: *See—*
Boessler, Hans; Quis, Peter; Buechse, Joachim; and Rauch, Hubert, 4,199,486, Cl. 260-31.80M.
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Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., 4,199,400, Cl. 162-146.000.
Falgiatore, Dominic R.; and Emmons, William D., 4,199,643, Cl. 428-290.000.
Miller, George A.; and Weiler, Ernest D., 4,199,591, Cl. 424-270.000.
Slejko, Frank L., 4,199,449, Cl. 210-29.000.
Rohrer, John D., to Parker Industries, Inc. Hinge structure for refuse containers. 4,199,075, Cl. 220-334.000.
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Moon, Malcolm W.; and Rohrstaff, Diane M., 4,199,583, Cl. 424-251.000.
Rolls-Royce Limited: *See—*
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Tubbs, Henry, 4,199,300, Cl. 415-9.000.
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Sherman, John D.; and Ronald, Jay R., 4,199,607, Cl. 426-477.000.
Ronc, Walter. Sandwich-structured double layer floor covering. 4,199,639, Cl. 428-138.000.
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Bross, Kenneth L., 4,198,752, Cl. 30-381.000.
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Rose, Leslie C.; and Hamrick, Joseph T., to World Energy Systems. Multistage gas generator. 4,199,024, Cl. 166-59.000.
Rose, Stanley E., to Omnicomp, Inc. Flexure mount for capstan motor. 4,199,092, Cl. 226-181.000.
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Zeibig, Anton, 4,198,711, Cl. 3-1.910.
Rosinski, Edward J.: *See—*
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Ross, Joseph A., to Solid Photography Inc. Methods and systems for three-dimensional measurement. 4,199,253, Cl. 356-5.000.
Ross, Lorne M. Placer mining sluice box apparatus and method. 4,199,441, Cl. 209-44.000.
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Zappelli, Piergiorgio; Rossodivita, Antonio; Pappa, Rosario; and Re, Luciano, 4,199,498, Cl. 260-112.50R.
Roth, Albert B.; and Thacher, Wallace L., to N L Industries, Inc. Pumping unit for a well pump. 4,198,820, Cl. 60-369.000.
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Roth, Howard T., to Inmont Corporation. Autoxidative paint composition comprising unsaturated polyether and maleic modified acrylic copolymer. 4,199,492, Cl. 260-32.80R.

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Rowe, Neal E.: *See—*
Shariff, Sadiq A.; Wilson, John R.; Bharteey, Brij M.; and Rowe, Neal E., 4,199,655, Cl. 174-72.00B.

Royce Equipment Company: *See—*
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Kachkarov, Alexandr G.; Rozhansky, Sergei B.; Golovakhina, Valentina A.; and Prikhodko, Valery V., 4,198,995, Cl. 134-133.000.

Rubin, Isadore E., to Pilot Unit Products, Inc. Apparatus for circulating a portion of the liquid contents of a tank for analysis and obtaining representative samples. 4,198,862, Cl. 73-421.00B.

Rubin, Mae K.: *See—*
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Rudy, Charles E., Jr.: *See—*
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Ruhl, John H., to Huck Manufacturing Company. Fatigue performance collars and lockbolt construction. 4,198,895, Cl. 85-7.000.

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Rottig, Walter, 4,199,523, Cl. 260-449.60R.

Runyan, Wesley G., to Rockwell International Corporation. Strain gauge apparatus and means for treating temperature dependency. 4,198,868, Cl. 73-708.000.

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Russell, H. Vernon; and Russell, Jeffrey V., to Applied Power Inc. Base for a hydraulically operated tool. 4,198,847, Cl. 72-462.000.

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Ryer, Jack; Brois, Stanley; and Winans, Esther D., to Exxon Research & Engineering Co. Alkylene glycol esters of carboxylate half esters of 1-aza-3,7-dioxabicyclo[3.3.0] oct-5-yl methyl alcohols, their preparation and use as additives for gasoline and middle distillate fuels and lubricants. 4,199,463, Cl. 252-51.50A.

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Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, 4,199,371, Cl. 127-37.000.

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Sakai, Yoshio: *See—*
Masuhara, Toshiaki; Yasui, Tokumasa; Sakai, Yoshio; Nakajima, Joh; Kosa, Yasunobu; Meguro, Satoshi; and Kubo, Masaharu, 4,199,778, Cl. 357-59.000.

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Ikeda, Hiroshi; Ishimaru, Osamu; Nakatake, Teruyoshi; and Sakamoto, Tetsuzo, 4,199,718, Cl. 324-158.0MG.

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Itoh, Takuji; Sakurada, Satoshi; and Tagaya, Nobuaki, 4,199,555, Cl. 423-239.000.

Salathe, Rene P.: *See—*
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Salem Corporation: *See—*
Wilt, Charles R., Jr.; and Schauermann, Floyd L., 4,199,549, Cl. 423-210.000.

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Moody, George W.; Wilson, John L.; and Salter, Stephen H., 4,198,821, Cl. 60-398.000.

Salts, Thomas R., to Besser Industries, Inc. Method and apparatus for stacking block-like articles. 4,199,287, Cl. 414-68.000.

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van den Boom, Johannes; Salwesky, Gert; Godel, Frank-Uwe; and Leitner, Wilfried, 4,199,128, Cl. 248-562.000.

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Chapman, Paul W., 4,198,924, Cl. 119-2.000.

Sanderson, Robert A.; and Chan, Patrick S., to American Hospital Supply Corporation. Motorless magnetically coupled stirrer. 4,199,265, Cl. 366-274.000.

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Carbonell, Jose; Hasler, Rolf; and Walliser, Roland, 4,199,813, Cl. 364-469.000.

Sanko, John R., to Paris Manufacturing Company, Inc. Sweater machine. 4,199,088, Cl. 223-67.000.

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Odinokov, Boris P.; Semenikhin, Anatoly Y.; Pakhtusov, Gavriil A.; Pakhtusov, Jury G.; and Sankov, Anatoly E., 4,199,192, Cl. 299-17.000.

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Sarrach, Donald J.: *See—*
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Sartore, Michael A. Filter. 4,199,454, Cl. 210-222.000.

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Kojimoto, Susumu; Sato, Takami; Ono, Junji; Mori, Toshio; and Suzuki, Shigeharu, 4,199,106, Cl. 239-542.000.

Sato, Takeshi; Sakamoto, Isao; Okamoto, Katsuaki; and Tada, Hiroji, to Nippon Jikkou Kabushiki Kaisha. Method of planting rod-shaped member in foundation. 4,198,793, Cl. 52-166.000.

Satoh, Ken; and Yanagida, Tuneo, to Olympus Optical Company, Ltd. Tape end warning apparatus. 4,199,792, Cl. 360-74.100.

Saukaitis, John C., to American Hoechst Corporation. Herbicides based on 2-dibenzofuranyloxyalkanecarboxylic acid derivatives. 4,199,346, Cl. 71-88.000.

Savage, Thomas J., to Polaroid Corporation. Low scene brightness indicator for use in a photographic camera. 4,199,237, Cl. 354-60.00E.

Savitsky, Alexandr V.: *See—*
Birjukov, Sergei B.; Gavrev, Valery S.; Goncharuk, Jury M.; Savitsky, Alexandr V.; and Lonchak, Viktor A., 4,198,866, Cl. 73-613.000.

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Saylor, Richard, to IDR, Inc. Digital video signal processor with distortion correction. 4,199,656, Cl. 178-66.100.

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Leunbach, Ib; Demandt, Kim; and Skilbreid, Ottar, 4,199,684, Cl. 250-402.000.

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Schaaf, Robert L.; Kan, Peter T.; and Cenker, Moses, to BASF Wyandotte Corporation. Stable liquid carbodiimide-containing polyisocyanate compositions. 4,199,524, Cl. 260-453.0SP.

Schade, Otto H., Jr., to RCA Corporation. Extended-drain MOS mirrors. 4,199,733, Cl. 330-277.000.

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Birkhofer, Herbert; and Ersoy, Metin, 4,199,094, Cl. 227-37.000.
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Schimmel, Nikolaus, to Wilhelm Schimmel Pianofortefabrik GmbH. Damper for pianos. 4,198,893, Cl. 84-255.000.
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Schmitt, Frederick L.: *See*—
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Schnarr, Marcus M., to Xerox Corporation. Coincidence gate ink jet with increased operating pressure window. 4,199,770, Cl. 346-140.00R.
Schneider, Daniel J. Power transmission belt. 4,198,875, Cl. 74-231.0CB.
Schneider, Jean C. Headrest for seat of vehicle. 4,199,191, Cl. 297-397.000.
Schoenick, Ralph R., to Rexnord Inc. Chain having disassembly detent. 4,198,814, Cl. 59-84.000.
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Schroder, Theo; and Metzger, Karl-Georg, to Bayer Aktiengesellschaft. N-Substituted amino glycoside compounds, their production, and their use as medicaments. 4,199,572, Cl. 424-180.000.
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Leppke, Elton D.; and Schuchmann, Russell P., 4,199,798, Cl. 361-76.000.
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Ferguson, Bruce A.; Ptasinski, Leo D.; and Schulz, Harvey E., 4,198,733, Cl. 24-113.00R.
Schulzke, Peter: *See*—
Sieber, Albrecht; Schulzke, Peter; and Werner, Peter, 4,198,933, Cl. 123-32.0EA.
Schurman, David B., Jr.: *See*—
Keefe, Richard A.; Schurman, David B., Jr.; and Leask, Jon W., 4,199,096, Cl. 228-52.000.
Schuster, Stanley E.: *See*—
Cook, Peter W.; and Schuster, Stanley E., 4,199,695, Cl. 307-269.000.
Schwarz, Gerhard, to Carl Zeiss Stiftung. Photographic diaphragm with two independent sets of leaves. 4,199,247, Cl. 354-274.000.
Schwarz, Gunter. Multi-layer adhesive material comprising two external adhesive layers and an internal elastic layer and method of using same for bonding bodies to one another. 4,199,645, Cl. 428-339.000.
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Ullman, Edwin F.; and Schwarzberg, Moshe, 4,199,559, Cl. 424-8.000.
Schwee, Leonard J.; Anderson, Wallace E.; Liu, Yuan-Jye; and Lee, Ronald N., to United States of America, Navy. Field determined cross-tie memory propagation circuit. 4,199,819, Cl. 365-87.000.
Schweiger, Fritz, to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehman. Side reflector for a high-temperature nuclear reactor. 4,199,405, Cl. 176-84.000.
SCM Corporation: *See*—
Gilmore, Cecilia; Miller, Donald E.; and Zielinski, Richard J., 4,199,608, Cl. 426-570.000.
Sortwell, Daniel R., III, 4,199,603, Cl. 426-92.000.
Scott, Alan B.: *See*—
Tidd, Leon E.; Scott, Alan B.; Madey, Julius M. J.; and Collins, Carter C., 4,199,261, Cl. 356-448.000.
Scott & Fetzer Company, The: *See*—
Miller, Wendell E., 4,198,822, Cl. 60-445.000.
Scozzari, Giuseppe, to Societa Italiana Telecomunicazioni Siemens S.p.A. Circuit arrangement for signal equalization in wide-band transmission system. 4,199,668, Cl. 179-175.30R.
Seaman, William E.: *See*—
Pfost, Robert F.; Seaman, William E.; and Newell, Chester W., 4,199,794, Cl. 360-92.000.
Searle, Eric H., to Dunlop Limited. Tire removal apparatus. 4,199,017, Cl. 157-1.100.
Sebag, Henri: *See*—
Vanlerberghe, Guy; and Sebag, Henri, 4,199,562, Cl. 424-47.000.
Sech, William A.: *See*—
Golas, Eugene A.; Sech, William A.; and Singh, Shri N., 4,199,087, Cl. 222-603.000.
Secord, Denise S.: *See*—
Battaglia, Charles J.; Secord, Denise S.; and Kim, Sang H., 4,199,412, Cl. 204-1.00T.
Secunda AG fur Vermietung Von Wirtschaftsgutern: *See*—
Tomasini, Gianni, 4,199,270, Cl. 401-183.000.
Sedlatschek, Robert: *See*—
Peterson, Wesley R.; Sedlatschek, Robert; Transue, James A.; and Totino, Peter J., 4,198,915, Cl. 112-225.000.
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Wostl, Wolfgang J.; Segal, Jack S.; Roach, Thomas L.; and Moore, Robert A., 4,199,100, Cl. 235-381.000.
Segbert, Josef: *See*—
Segbert, Stephan; and Segbert, Josef, 4,199,289, Cl. 414-347.000.
Segbert, Stephan; and Segbert, Josef, to Segbert, Stephan. Positioning apparatus for roller-transport cart. 4,199,289, Cl. 414-347.000.
Seguchi, Koji: *See*—
Araki, Tadashi; Seito, Hatsuo; Funabashi, Masayuki; Saito, Ritaro; and Seguchi, Koji, 4,199,554, Cl. 423-239.000.
Seibt, Hans; and Schlenz, Rudolf, to Fichtel & Sachs AG. Water-cooled internal combustion engine. 4,198,935, Cl. 123-41.440.
Seito, Hatsuo: *See*—
Araki, Tadashi; Seito, Hatsuo; Funabashi, Masayuki; Saito, Ritaro; and Seguchi, Koji, 4,199,554, Cl. 423-239.000.
Sellmeyer, Jack S.: *See*—
Cummings, Forest M.; and Sellmeyer, Jack S., 4,199,723, Cl. 455-108.000.
Semenikhin, Anatoly Y.: *See*—
Odinokov, Boris P.; Semenikhin, Anatoly Y.; Pakhtusov, Gavriil A.; Pakhtusov, Jury G.; and Sankov, Anatoly E., 4,199,192, Cl. 299-17.000.
Senet, Jean-Pierre G.; and Le Roy, Patrice M., to Societe Nationale des Poudres et Explosifs. Allyl-acrylic monomers, their preparation and polymers derived therefrom. 4,199,526, Cl. 260-463.000.
Senkan, Selim M.; and Hirsch, Gerald P., to United States of America, Energy. Method of freezing living cells and tissues with improved subsequent survival. 4,199,022, Cl. 165-2.000.
Serex, Charles; and Decombe, Robert, to Sublistatic Holding SA. Printing process. 4,199,317, Cl. 8-2.50A.
Sergeev, Nikolai N.: *See*—
Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Matveev, Vladimir A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; Mebel, Vladimir S.; Pravednikov, Erik V.; Rabinovich, Efim M.; and Ushakov, Valery K., 4,198,841, Cl. 72-224.000.
Serrus Paulet, Edouard. Moving magnet, rotary switch. 4,199,741, Cl. 335-206.000.
Servicemaster Industries, Inc.: *See*—
Copeland, William M., 4,198,721, Cl. 15-50.00R.
Seto, Haruo: *See*—
Yamagishi, Michio; Mizoue, Kazutoshi; Mizutani, Taku; Hara, Hiroshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,199,515, Cl. 260-345.70R.
Seven-Eleven Patents, Inc.: *See*—
Kerber, Francis L.; and Durbin, George E., 4,199,134, Cl. 254-164.000.
Shandon Southern Products Limited: *See*—
Henderson, Kenneth J., 4,199,558, Cl. 424-3.000.
Shariff, Sadiq A.; Wilson, John R.; Bharteey, Brij M.; and Rowe, Neal E., to Westinghouse Electric Corp. Circuit breaker with insulated horizontal bus bars. 4,199,655, Cl. 174-72.00B.
Sharpless, John, to Nordson Corporation. Electric fluid heater. 4,199,675, Cl. 219-305.000.
Shaw, Robert F.: *See*—
Cage, John M.; Shaw, Robert F.; and Stoft, Paul E., 4,198,957, Cl. 128-1.00R.
Shell Oil Company: *See*—
Benson, Herbert L., Jr., 4,199,466, Cl. 252-95.000.
De Jong, Feike; and Reinhoudt, David N., 4,199,513, Cl. 260-338.000.
Petty, Walter L., 4,199,527, Cl. 260-465.00D.
Pilgram, Kurt H. G.; and Skiles, Richard D., 4,199,347, Cl. 71-118.000.
Shenk, Edwin K., to Polaroid Corporation. Automatic focusing camera. 4,199,244, Cl. 354-195.000.
Shephard, Margaret C.: *See*—
Cox, John M.; and Shephard, Margaret C., 4,199,584, Cl. 424-251.000.
Sherman, Charles J., to Western Electric Co. Inc. Method of fabricating a body having a plurality of conductors. 4,199,408, Cl. 204-15.000.
Sherman, John D.; and Ronald, Jay R., to Union Carbide Corporation. Process for carbonation of an aqueous medium. 4,199,607, Cl. 426-477.000.
Sherwin-Williams Company, The: *See*—
Hiller, Robert E.; and Lawlor, Christopher, 4,198,723, Cl. 15-230.110.
Shields, James E., to Eli Lilly and Company. Peptides related to somatostatin. 4,199,500, Cl. 260-112.50S.
Shields, James E., to Eli Lilly and Company. Peptides related to somatostatin. 4,199,501, Cl. 260-112.50S.
Shih, Kwang K.: *See*—
Hung, Roland Y.; and Shih, Kwang K., 4,199,385, Cl. 148-175.000.
Shimano Industrial Company Limited: *See*—
Nagano, Masashi; Fujimoto, Hideaki; and Isobe, Mitsuhide, 4,198,873, Cl. 74-217.00B.

Nagano, Masashi; and Isobe, Mitsuhide, 4,198,874, Cl. 74-217.00B.
Nagano, Masashi, 4,198,876, Cl. 74-243.00R.
Shimizu Construction Co., Ltd., The: *See—*
Himeji, Akio; Okumura, Tadahiko; and Kajioka, Yasuo, 4,199,279, Cl. 405-303.000.
Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi, 4,199,637, Cl. 428-119.000.
Shionogi & Co., Ltd.: *See—*
Igarashi, Kikuo; and Irisawa, Junji, 4,199,570, Cl. 424-180.000.
Shishido, Tadao: *See—*
Hinata, Masanao; Mihara, Yuji; Shishido, Tadao; and Adachi, Keiichi, 4,199,360, Cl. 430-503.000.
Short, William T., to General Motors Corporation. Moisture curing polyurethane topcoat paint displaying geometric metamerism. 4,199,489, Cl. 260-37.00M.
Shum, Ming S., to UOP Inc. Method of producing finned heat transfer tube with porous boiling surface. 4,199,414, Cl. 204-15.000.
Shuman, Robert T.: *See—*
Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T., 4,199,499, Cl. 260-112.50R.
SI Handling Systems, Inc.: *See—*
Jacoby, Charles E., 4,199,290, Cl. 414-354.000.
Siddle, Kenneth R.: *See—*
McCawley, Robert; and Siddle, Kenneth R., 4,199,453, Cl. 210-160.000.
Sidewalk Savage Enterprises, Inc.: *See—*
Mason, Winfred A., 4,199,181, Cl. 294-54.000.
Sieber, Albrecht; Schulzke, Peter; and Werner, Peter, to Robert Bosch GmbH. Governor system for internal combustion engines. 4,198,933, Cl. 123-32.0EA.
Siemens Aktiengesellschaft: *See—*
Brendl, Rudolf; Finkenzeller, Johann; Kirsch, Harry; and Weiss, Karl, 4,199,687, Cl. 250-468.000.
Dressen, Anton, 4,199,734, Cl. 331-76.000.
Goldman, Gerd, 4,199,616, Cl. 427-53.100.
Landgraf, Hermann; and Worschieschek, Rainer, 4,198,755, Cl. 433-126.000.
Oestreich, Ulrich, 4,199,224, Cl. 350-96.230.
Ramer, Robert; and Soldner, Rudolf, 4,198,742, Cl. 29-570.000.
Siemund, Gunter: *See—*
Nuss, Karl-Heinz; Nittel, Klaus-Dieter; Oei, Han-Yong; and Siemund, Gunter, 4,199,381, Cl. 148-6.15R.
Sierra Research Corporation: *See—*
Dosch, Thomas J.; and Prakash, Ravinder, 4,199,257, Cl. 356-252.000.
Siess, Hans; Wiedeking, Elmar; and Sigle, Werner. Pyrometric temperature measurements in flameless atomic absorption spectroscopy. 4,198,849, Cl. 73-1.00F.
Sigle, Werner: *See—*
Siess, Hans; Wiedeking, Elmar; and Sigle, Werner, 4,198,849, Cl. 73-1.00F.
Sill, Richard C., to Atlantic Richfield Company. Luminescent solar collector. 4,199,376, Cl. 136-89.0FC.
Silver, Jules; and Borrows, Thomas G., to Masti-Kure Products Company, Inc. Film-forming alcoholic microbicidal teat dip and method of use thereof. 4,199,564, Cl. 424-80.000.
Simon, Kirby. Waterproof bathtub reading stand. 4,199,125, Cl. 248-441.00A.
Simpkins, Joe: *See—*
Soleau, Bertrand S., Jr., 4,198,956, Cl. 126-444.000.
Singer Company, The: *See—*
Lamasney, Michael V.; and Kaase, Frederick C., 4,198,762, Cl. 35-10.400.
Odermann, Charles R.; and Brown, Jack, 4,199,712, Cl. 318-345.00E.
Peterson, Wesley R.; Sedlatschek, Robert; Transue, James A.; and Totino, Peter J., 4,198,915, Cl. 112-225.000.
Wahl, Richard E.; King, John E.; Becket, William C.; and Gannaway, Thomas W., 4,198,768, Cl. 35-29.00R.
Singh, Shri N.: *See—*
Golas, Eugene A.; Sech, William A.; and Singh, Shri N., 4,199,087, Cl. 222-603.000.
Sinkevitch, Robert M., to General Motors Corporation. Solid electrolyte exhaust gas sensor with increased NO_x sensitivity. 4,199,425, Cl. 204-195.00S.
Sinnreich, Manfred. Intrauterine surgical device. 4,198,981, Cl. 128-344.000.
Siphar S. A.: *See—*
Ferrari, Giorgio; and Vecchietti, Vittorio, 4,199,579, Cl. 424-248.550.
Sjoblom, Ake E. Nestable roller pallet. 4,199,164, Cl. 280-33.99H.
Skelly, Michael A. Golf putter. 4,199,144, Cl. 273-164.000.
SKF Nova AB: *See—*
Pearson, Torgny, 4,199,203, Cl. 308-213.000.
Skiera, Heinz, to VEB Polygraph Druckmaschinenwerke Leipzig. Drive for an ink supplying device of a rotary printing press. 4,198,908, Cl. 101-217.000.
Skilbreid, Ottar: *See—*
Leunbach, Ib; Demandt, Kim; and Skilbreid, Ottar, 4,199,684, Cl. 250-402.000.
Skiles, Richard D.: *See—*
Pilgram, Kurt H. G.; and Skiles, Richard D., 4,199,347, Cl. 71-118.000.
Skinner, Harry W.; and Deeb, Fouad M., to Press-Seal Gasket Corporation. Two part sleeve gasket. 4,199,157, Cl. 277-190.000.
Skraba, Frank W., to Phillips Petroleum Company. Recovery of HF from an alkylation unit acid stream containing acid soluble oil. 4,199,409, Cl. 203-39.000.
Slack, John F.: *See—*
Carp, Ralph W.; and Slack, John F., 4,198,934, Cl. 123-32.0EA.
Slaughter, Raymond J.; and Chadwick, Derek, to BICC Limited. Optical guides. 4,199,225, Cl. 350-96.230.
Slejko, Frank L., to Rohm and Haas Company. Removal of bacteria. 4,199,449, Cl. 210-29.000.
Smith, Eugene L., Jr.: *See—*
Wang, Samuel S.; Lewellyn, Morris E.; and Smith, Eugene L., Jr., 4,199,065, Cl. 209-166.000.
Smith, Frederick R., to Avtex Fibers Inc. Alloy rayon. 4,199,367, Cl. 106-168.000.
Smith International, Inc.: *See—*
Oldham, Joel S.; and Landerville, Timothy L., 4,199,156, Cl. 277-92.000.
Trzeciak, Kurt H., 4,199,201, Cl. 308-8.200.
Smith-Kettlewell Eye Research Foundation: *See—*
Tidd, Leon E.; Scott, Alan B.; Madey, Julius M. J.; and Collins, Carter C., 4,199,261, Cl. 356-448.000.
Smith, Philip E. Smoker's appliance. 4,198,992, Cl. 131-171.00R.
Smith, Richard S.: *See—*
Filkow, Colin; and Smith, Richard S., 4,199,089, Cl. 223-79.000.
Smith, Robert H., to Atlantic Richfield Company. Inhibiting spontaneous combustion of coal. 4,199,325, Cl. 44-1.00R.
Smith, Timothy J. C., to Union Carbide Corporation. Treatment of substrate prior to autodeposition. 4,199,624, Cl. 427-309.000.
Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,199,499, Cl. 260-112.50R.
Snamprogetti S.p.A.: *See—*
Mantovani, Elvio; Palladino, Nicola; and Zanobi, Antonio, 4,199,478, Cl. 252-455.00Z.
Zappelli, Piergiorgio; Rossodivita, Antonio; Pappa, Rosario; and Re, Luciano, 4,199,498, Cl. 260-112.50R.
Zardi, Umberto; and Lagana', Vincenzo, 4,199,537, Cl. 261-112.000.
Soble, Bernard D. Method and fixture for lateral and longitudinal positioning of mobile or modular home units. 4,198,797, Cl. 52-299.000.
Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Scozzari, Giuseppe, 4,199,668, Cl. 179-175.30R.
Societe de Prospection et d'Inventions Techniques S.P.I.T: *See—*
Combette, Marc; and Ollivier, Jean, 4,199,093, Cl. 227-9.000.
Societe d'Etudes d'Automatisation, de Regulation et d'Appareils de Mesures S.A.: *See—*
Mercier, Jacques; and Ponthus, Andre, 4,198,828, Cl. 62-55.000.
Societe Luchaire: *See—*
Lamic, Jackie G.; Pascal, Pierre B.; Schilling, Michel E.; and Zante, Hubert A., 4,198,896, Cl. 89-1.818.
Societe Nationale des Poudres et Explosifs: *See—*
Lamic, Jackie G.; Pascal, Pierre B.; Schilling, Michel E.; and Zante, Hubert A., 4,198,896, Cl. 89-1.818.
Senet, Jean-Pierre G.; and Le Roy, Patrice M., 4,199,526, Cl. 260-463.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Raffy, Pierre M.; Andre, Pierre A.; Girault, Jean-Pierre Y. B.; Richter, Gerhard; and Thevenin, Jean-Claude P. H. P., 4,199,295, Cl. 415-115.000.
Societe Nationale Elf Aquitaine (Production): *See—*
Dulout, Charles; Peyrouset, Andre; Panaris, Rene; Hannoun, Claude; and Vincent, Jean, 4,199,450, Cl. 210-31.00C.
Societe pour la Recherche, l'Etude et Mise au Point de Tous Brevets, S.O.R.E.B.: *See—*
Minerbe, Michel A. R., 4,198,761, Cl. 34-10.000.
Sofy, Hugh M. Transfer device. 4,198,845, Cl. 72-421.000.
Soldner, Rudolf: *See—*
Ramer, Robert; and Soldner, Rudolf, 4,198,742, Cl. 29-570.000.
Soleau, Bertrand S., Jr., to Simpkins, Joe. Multi-purpose solar energy collector. 4,198,956, Cl. 126-444.000.
Solid Photography Inc.: *See—*
Ross, Joseph A., 4,199,253, Cl. 356-5.000.
Solovieva, Tamara E.: *See—*
Lifentsev, Oleg M.; Melnikov, Boris N.; Zaitsev, Gennady E.; and Solovieva, Tamara E., 4,199,319, Cl. 8-116.00R.
Sommer, Ruediger: *See—*
Wellendorf, Klaus; and Sommer, Ruediger, 4,199,784, Cl. 358-296.000.
Sone, Tomiho: *See—*
Kamiya, Shunji; Satake, Kunio; Sone, Tomiho; and Teraoka, Tsutomu, 4,199,490, Cl. 260-29.70D.
Sonetronic Engineering, Inc.: *See—*
Lucas, John R.; and Lee, Sung C., 4,199,752, Cl. 340-388.000.
Sony Corporation: *See—*
Ohsawa, Mitsuo, 4,199,149, Cl. 274-23.00A.
Tsujimura, Katsuhito, 4,199,788, Cl. 358-183.000.
Sornberger, G. Russell, to Moore Business Forms, Inc. Carbonless manifold business forms. 4,199,174, Cl. 282-27.500.
Sortwell, Daniel R., III, to SCM Corporation. Production of coated frozen fish or other comestible. 4,199,603, Cl. 426-92.000.
Soula, Gerard; and Lefevre, Jean-Paul, to Orogil. Compositions based on alkenyl succinimides, a method of preparing them, and lubricant compositions containing them. 4,199,462, Cl. 252-51.50A.

Sovey, James S.: *See—*
Mirtich, Michael J.; and Sovey, James S., 4,199,650, Cl. 428-421.000.
Sparex Ltd. of Exeter Airport: *See—*
Horton, Roy, 4,198,921, Cl. 116-283.000.
Spector, Dov; and Spector, Yechiel, to Spectronix Ltd. Fire and explosion detection apparatus. 4,199,682, Cl. 250-339.000.
Spector, Yechiel: *See—*
Spector, Dov; and Spector, Yechiel, 4,199,682, Cl. 250-339.000.
Spectronix Ltd.: *See—*
Spector, Dov; and Spector, Yechiel, 4,199,682, Cl. 250-339.000.
Spence, Geoffrey M. Process for producing tubular articles. 4,198,843, Cl. 72-356.000.
Spenlove-Spenlove, Peter J. F. B.: *See—*
Della-Porta, Clifford A.; and Spenlove-Spenlove, Peter J. F. B., 4,198,894, Cl. 84-422.00R.
Sperry Corporation: *See—*
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,199,811, Cl. 364-200.000.
Spider Staging, Inc.: *See—*
Fisher, Sidney L.; Fisher, Harry S.; and Leivestad, Ole E., 4,198,724, Cl. 15-302.000.
Spitzke, Arthur, to Matrix Corporation. Skateboard skid accessory. 4,199,165, Cl. 280-87.04A.
Sprague Electric Company: *See—*
Aldridge, Tomm V.; and Haas, Richard M., 4,199,744, Cl. 336-178.000.
Gontowski, Walter S., Jr., 4,199,753, Cl. 340-555.000.
Staab, Robert A.: *See—*
Barford, Brian D.; Gilbert, Lawrence A.; Staab, Robert A.; Collins, Royal D.; and Ries, Charles R., 4,199,468, Cl. 252-103.000.
Stainless Steel Fabricating, Inc.: *See—*
Worden, Donald G., 4,198,902, Cl. 99-535.000.
Standard Oil Company: *See—*
McCollum, John D., 4,199,026, Cl. 166-251.000.
Standard Oil Company (Indiana): *See—*
Melquist, John L.; and Hoff, Glen R., 4,199,476, Cl. 252-431.00R.
Stange, Klaus K.: *See—*
Blossey, Daniel F.; Deshpande, Narayan V.; Faucz, Eugene C.; Stange, Klaus K.; and Swackhamer, Stanley B., 4,199,766, Cl. 346-74.100.
Stansberry, Charles D. Horse race betting game. 4,199,147, Cl. 273-274.000.
Staubli, Sebastian: *See—*
Bonath, Bernt; Staubli, Sebastian; Horisberger, Hans; and Szekely, Istvan, 4,199,529, Cl. 260-508.000.
Stauffer Chemical Company: *See—*
Fearing, Ralph B., 4,199,534, Cl. 260-928.000.
Lam, Hsiao-Ling, 4,199,594, Cl. 424-285.000.
Mueller, Klaus W., 4,199,154, Cl. 277-53.000.
Photis, James M., 4,199,420, Cl. 204-159.150.
Stehl, Rudolph H.: *See—*
Nestrick, Terry J.; and Stehl, Rudolph H., 4,199,330, Cl. 55-67.000.
Steinhage, Peter-Wilhelm; and Kunze, Claus, to Heimann GmbH. Warm light reflector. 4,199,218, Cl. 350-1.700.
Steinkuhl, Bernd; and Breuer, Oswald, to Gewerkschaft Eisenhutte Westfalia. Control means for a coal plough. 4,199,194, Cl. 299-34.000.
Steinmetz, Werner: *See—*
Ferri, Johann W.; Steinmetz, Werner; Briner, Emil; and Fritschi, Bruno, 4,199,333, Cl. 55-290.000.
Stendel, Wilhelm: *See—*
Fuchs, Rainer; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,199,596, Cl. 424-304.000.
Stenger, Richard E.: *See—*
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Sterling Drug Inc.: *See—*
Lesher, George Y.; and Opalka, Chester J., Jr., 4,199,586, Cl. 424-263.000.
Sterling Glove Co. Ltd.: *See—*
Filkow, Colin; and Smith, Richard S., 4,199,089, Cl. 223-79.000.
Sterling, Henley F.; and Humphreys, Richard A., to ITT Industries, Incorporated. Selective plating process. 4,199,415, Cl. 204-15.000.
Stevens, Timothy S.: *See—*
Miller, Theodore E., Jr.; and Stevens, Timothy S., 4,199,323, Cl. 23-230.00R.
Stevenson, Neil A., to Fisons Limited. Composition. 4,199,578, Cl. 424-240.000.
Stiles, Walter J.: *See—*
Salisbury, Winfield W.; and Stiles, Walter J., 4,199,034, Cl. 175-11.000.
Stingl, Hans A., to Toms River Chemical Corporation. Washfast disazo dyestuffs. 4,199,318, Cl. 8-41.00B.
Stoft, Paul E.: *See—*
Cage, John M.; Shaw, Robert F.; and Stoft, Paul E., 4,198,957, Cl. 128-1.00R.
Stohr, Albert: *See—*
Hennig, Kurt; Klein, Manfred; and Stohr, Albert, 4,198,812, Cl. 59-78.100.
Stoll, Kurt; and deFries, Jan R., to Festo-Maschinenfabrik Gottlieb Stoll. Valve arrangement. 4,199,130, Cl. 251-29.000.
Stone, Orison W. Method of making a recloseable, pilfer-proof container. 4,198,900, Cl. 93-49.00M.
Strauss, Udo; and Streitberger, Hans-Joachim, to BASF Farben & Fasern AG. Process for cataphoretically coating the surfaces of electrically conducting substrates. 4,199,422, Cl. 204-181.00C.
Streck, Fritz; Paprotny, Peter; and Brager, Gerhard, to Volkswagenwerk Aktiengesellschaft. Automatic production machine. 4,199,294, Cl. 414-739.000.
Streitberger, Hans-Joachim: *See—*
Strauss, Udo; and Streitberger, Hans-Joachim, 4,199,422, Cl. 204-181.00C.
Strick Corporation: *See—*
Abolins, Andrew, 4,199,297, Cl. 414-525.00R.
Strickman, Melvyn B.: *See—*
Strickman, Robert L.; Fournier, Erick-Pierre; and Strickman, Melvyn B., 4,198,965, Cl. 128-127.000.
Strickman, Robert L.; Fournier, Erick-Pierre; and Strickman, Melvyn B. Disposable contraceptive cervical barrier. 4,198,965, Cl. 128-127.000.
Strikis, Guntis V.; Halacka, Michael F.; and Crain, Ronald W., to Ford Motor Company. Positive displacement compact slipper pump. 4,199,304, Cl. 417-310.000.
Stryjewski, Walter A.; and Wright, John F., to Eastman Kodak Company. Electrographic fixing member and apparatus and process using same. 4,199,626, Cl. 427-444.000.
Stuber, Richard A., to Tecumseh Products Company. Method for forming a magnetic core for a linear compressor. 4,198,743, Cl. 29-596.000.
Sublistatic Holding SA: *See—*
Serex, Charles; and Decombe, Robert, 4,199,317, Cl. 8-2.50A.
Sugerman, Gerald: *See—*
Monte, Salvatore J.; and Sugerman, Gerald, 4,199,517, Cl. 260-348.630.
Suggitt, Robert M.: *See—*
Cole, Edward L.; Estes, John H.; and Suggitt, Robert M., 4,199,328, Cl. 48-213.000.
Sugier, Andre: *See—*
Courty, Philippe; Le Page, Jean-Francois; Sugier, Andre; and Cosyns, Jean, 4,199,437, Cl. 208-124.000.
Sukert, Haven L. Vessel for supporting and automatically providing liquid to vegetation. 4,198,784, Cl. 47-79.000.
Sumitomo Chemical Company, Limited: *See—*
Kojimoto, Susumu; Sato, Takami; Ono, Junji; Mori, Toshio; and Suzuki, Shigeharu, 4,199,106, Cl. 239-542.000.
Ohrui, Tetsuya; Kato, Michio; Ayano, Masami; Kawaguchi, Tsunejiro; and Abe, Tadashi, 4,199,410, Cl. 203-49.000.
Sumitomo Electric Industries, Ltd.: *See—*
Kobayashi, Akira; and Ihara, Susumu, 4,199,254, Cl. 356-28.000.
Sumrell, Gene; Mod, Robert R.; Magne, Frank C.; and Koos, Ronald E., to United States of America, Agriculture. Fatty acid-derived lubricants and additives. 4,199,460, Cl. 252-46.700.
Sunagawa, Makoto: *See—*
Hori, Yutaka; Sunagawa, Makoto; and Matsuoka, Naoki, 4,199,646, Cl. 428-344.000.
Sundwiger Eisenhutte Maschinenfabrik Grah & Co.: *See—*
Muller, Friedrich; Kummerhoff, Gerhard; and Uphues, Ewald, 4,199,117, Cl. 242-75.200.
Sunesson, Sigvard B., to Goteborgs Bandvaveri AB. Device arranged to tighten and to lock slings or load-fastening belts. 4,199,182, Cl. 254-79.000.
Suzki, Akiyoshi; and Hirabayashi, Yoichi, to Canon Kabushiki Kaisha. Device for scanning an object with a light beam. 4,199,219, Cl. 350-6.100.
Suzuki, Kenji, to Tokyo Shibaura Electric Co., Inc. Radioactive-ray counting system. 4,198,986, Cl. 128-659.000.
Suzuki, Kentaro: *See—*
Ono, Atsushi; Fujino, Shoji; Ozaki, Yukio; and Suzuki, Kentaro, 4,199,721, Cl. 455-77.000.
Suzuki, Kiyoshi: *See—*
Nakagawa, Takeo; Suzuki, Kiyoshi; and Okawa, Hiroyasu, 4,198,884, Cl. 76-107.00R.
Suzuki, Motoo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Pneumatic control apparatus for internal combustion. 4,198,937, Cl. 123-117.00A.
Suzuki, Ryoichi: *See—*
Uchiyama, Takashi; Suzuki, Ryoichi; Ito, Fumio; Nagasaka, Wataru; Okuno, Youichi; and Matsuda, Mutsuhide, 4,199,239, Cl. 354-86.000.
Suzuki, Shigeharu: *See—*
Kojimoto, Susumu; Sato, Takami; Ono, Junji; Mori, Toshio; and Suzuki, Shigeharu, 4,199,106, Cl. 239-542.000.
Suzzoni, Jean-Pierre L.: *See—*
Grange, Jean-Claude C.; Hernandez, Philippe; Reynes, Daniel F.; Suzzoni, Jean-Pierre L.; and Tu, Nghiem H., 4,199,664, Cl. 179-18.0FA.
Swackhamer, Stanley B.: *See—*
Blossey, Daniel F.; Deshpande, Narayan V.; Faucz, Eugene C.; Stange, Klaus K.; and Swackhamer, Stanley B., 4,199,766, Cl. 346-74.100.
Swanson, Alfred B. Scaphoid implant. 4,198,712, Cl. 3-1.910.
Swanson, Alfred B. Protective member for implantable prosthesis and method of protecting the prosthesis. 4,198,713, Cl. 3-1.910.
Swenson, Oscar E.: *See—*
Estlick, Raymond J.; and Swenson, Oscar E., 4,199,762, Cl. 343-765.000.
Swensrud, Roger L.: *See—*
Daugherty, Roger H.; Jones, Warren W.; and Swensrud, Roger L., 4,199,700, Cl. 310-71.000.
Switall, Thomas G., to Ryco Graphic Manufacturing Inc. Spray dampening system for offset printing with page control assembly. 4,198,907, Cl. 101-147.000.

Sword, Carl V.; Halicki, Frank E.; and Geiss, Edward G. Apparatus for curing coatings on welded longitudinal seams of can bodies. 4,199,672, Cl. 219-9.500.
SWS Silicones Corporation: *See*—
McAfee, Richard C., 4,199,511, Cl. 260-326.00E.
Sybron Corporation: *See*—
Blair, James E.; and Davis, Lois T., 4,199,444, Cl. 210-11.000.
Syva Company: *See*—
Ullman, Edwin F.; and Schwarzberg, Moshe, 4,199,559, Cl. 424-8.000.
Szabo, Lajos: *See*—
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, 4,199,505, Cl. 260-244.400.
Szadkowski, Stanislav, to Vesuvius International Corporation. Closed loop track slide gate mechanism. 4,199,086, Cl. 222-600.000.
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, to Richter Gedeon Vegyeszeti Gyar Rt. Process for the preparation of alkaloids of the leurosine type. 4,199,505, Cl. 260-244.400.
Szarvady, Bela: *See*—
Szantay, Csaba; Szabo, Lajos; Honty, Katalin; Nogradi, Katalin; Jovanovics, Karola; Dezseri, Eszter; Dancsi, Lajos; Lorincz, Csaba; Szarvady, Bela; and Kovacs, Lajos, 4,199,505, Cl. 260-244.400.
Szatkowski, Paul R.: *See*—
Louderback, Allan L.; and Szatkowski, Paul R., 4,199,471, Cl. 252-408.000.
Sze, Morgan C.; Bennett, Thomas M.; and Unger, Harold, to Lummus Company, The. Feedstock treatment. 4,199,434, Cl. 208-40.000.
Szekely, Istvan: *See*—
Bonath, Bernt; Staubli, Sebastian; Horisberger, Hans; and Szekely, Istvan, 4,199,529, Cl. 260-508.000.
Szentmiklosi, Peter: *See*—
Gyarmati, Laszlo; Racz, Istvan; Szentmiklosi, Peter; and Plachy, Janos, 4,199,560, Cl. 424-19.000.
Szmuszkovicz, Jacob. N-(2-Aminocycloheptyl)acylanilides and methods to treat depression. 4,199,589, Cl. 424-267.000.
Szporny, Laszlo: *See*—
Matolcsy, Gyorgy; Bartok nee Berencsy, Piroska; Kiss, Bela; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo, 4,199,598, Cl. 424-315.000.
Tachick, Henry N., to General Electric Company. Method of constructing an electrical connector switching module. 4,199,213, Cl. 339-111.000.
Tachida, Hiroki, to Nippon Gakki Seizo Kabushiki Kaisha. Improved structure for connecting a leg to a massive body. 4,199,124, Cl. 248-188.000.
Tada, Hiroji: *See*—
Sato, Takeshi; Sakamoto, Isao; Okamoto, Katsuaki; and Tada, Hiroji, 4,198,793, Cl. 52-166.000.
Tagaya, Nobuaki: *See*—
Itoh, Takuji; Sakurada, Satoshi; and Tagaya, Nobuaki, 4,199,555, Cl. 423-239.000.
Taguchi, Tamio, to Hitachi, Ltd. Key input circuit capable of roll-over operation. 4,199,750, Cl. 340-365.00E.
Tai, Masaru: *See*—
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,199,566, Cl. 424-114.000.
Taisho Pharmaceutical Co., Ltd.: *See*—
Yamagishi, Michio; Mizoue, Kazutoshi; Mizutani, Taku; Hara, Hiroshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, 4,199,515, Cl. 260-345.70R.
Takahashi, Kotaro: *See*—
Miyasaka, Kenzi; Namiki, Ryo; and Takahashi, Kotaro, 4,198,809, Cl. 368-80.000.
Takahashi, Yoko: *See*—
Omura, Satoshi; Iwai, Yuzuru; Awaya, Juichi; Takahashi, Yoko; and Oiwa, Ruiko, 4,199,514, Cl. 260-343.30R.
Takahata, Masahiro: *See*—
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,199,566, Cl. 424-114.000.
Takashita, Yutaka: *See*—
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,199,566, Cl. 424-114.000.
Takeda Chemical Industries, Ltd.: *See*—
Oka, Yoshikazu; Itoh, Katsumi; and Hirata, Minoru, 4,199,582, Cl. 424-250.000.
Terao, Shinji; and Kato, Kaneyoshi, 4,199,531, Cl. 260-607.0AR.
Takeda, Nobuhiro; and Hattori, Masaichi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Manually re-set inertia switch assembly. 4,199,670, Cl. 200-61.45R.
Takeshita, Toru; Niki, Takao; Kawashima, Hiroyuki; and Bannai, Kiyoshi, to Teijin Limited. Novel 1α-hydroxy-24-oxovitamin D_3, its preparing process and the novel precursors thereof. 4,199,577, Cl. 424-236.000.
Takigawa, Tadahiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron beam exposing method and electron beam apparatus. 4,199,689, Cl. 250-492.00A.
Talarico, Joe. Rack. 4,199,069, Cl. 211-194.000.
Talley, Lawrence M., to Watteredge-Uniflex, Inc. Termination for alternate polarity resistance welding cable. 4,199,653, Cl. 174-15.0WF.
Tamamura, Hideo: *See*—
Matsuda, Mutsuhide; Tamura, Shuichi; and Tamamura, Hideo, 4,199,235, Cl. 354-25.000.
Tamaru, Munetaka, to Citizen Watch Co., Ltd. Calendar timepiece. 4,198,808, Cl. 368-37.000.
Tamaru, Munetaka: *See*—
Kume, Kazunari; Watanabe, Minoru; Ohno, Hideshi; Tamaru, Munetaka; Machida, Takayasu; Nakamura, Seiichi; and Morokawa, Shigeru, 4,199,699, Cl. 310-49.00R.
Tamm, Paul W.; and Langlois, Gordon E., to Chevron Research Company. Staged turbulent bed retorting process. 4,199,432, Cl. 208-8.00R.
Tamura, Shuichi: *See*—
Matsuda, Mutsuhide; Tamura, Shuichi; and Tamamura, Hideo, 4,199,235, Cl. 354-25.000.
Tanaka, Hiroshi, to Nittan Company, Ltd. Optical smoke detector. 4,199,755, Cl. 340-630.000.
Tanaka, Mitsuo: *See*—
Ikushima, Ichiro; Tanaka, Mitsuo; and Maeda, Minoru, 4,199,222, Cl. 350-96.190.
Tanaka, Osamu: *See*—
Uesugi, Kyozo; and Tanaka, Osamu, 4,199,227, Cl. 350-187.000.
Tanaka, Shikei; Matsui, Kunihiko; and Kobayashi, Tetsuji, to Tokyo Shibaura Electric Co., Ltd. Multiplier using hall element. 4,199,696, Cl. 307-309.000.
Tarpley, William B., Jr.; and Culp, Donald R., to Energy & Minerals Research Co. Apparatus and method of monitoring anchored bolts. 4,198,865, Cl. 73-582.000.
Tatyanchikov, Valentin A.: *See*—
Evkin, Ivan F.; Olevsky, Viktor M.; Ruchinsky, Vitaly R.; Tatyanchikov, Valentin A.; and Nikolaev, Jury N., 4,199,398, Cl. 159-6.00R.
Tauber, Thomas E. Oil monitoring apparatus. 4,199,443, Cl. 210-85.000.
Taya, Akira: *See*—
Akiyama, Junetsu; Fuchida, Takayoshi; Taya, Akira; Nagafuchi, Kazunori; Kohmoto, Kohtaro; and Kobuya, Tomohiko, 4,199,707, Cl. 313-487.000.
Taylor, Bert C., Jr.: *See*—
Albrecht, Leonard N.; and Taylor, Bert C., Jr., 4,199,188, Cl. 296-100.000.
Taylor, Challen E., to Goodyear Tire & Rubber Company, The. Continuous vulcanization method and apparatus. 4,199,542, Cl. 264-563.000.
Taylor, David L.; and Harris, Stephen A., to Harris Corporation. Reversable electrically alterable amplifier configurations. 4,199,731, Cl. 330-262.000.
Taylor, Glenn N., to Kendall Company, The. Retaining member for a catheter side arm. 4,198,984, Cl. 128-349.0BV.
Taylor, Richard J., to Quantel Limited. Video drop out compensator incorporating digital field storage. 4,199,780, Cl. 358-8.000.
Taylor, William L.: *See*—
Varshneya, Arun K.; and Taylor, William L., 4,199,704, Cl. 313-221.000.
TBW Industries, Inc.: *See*—
Webre, Rodney F. A., Jr.; and Dinger, Oris H., Jr., 4,199,298, Cl. 414-458.000.
Technicon Instruments Corporation: *See*—
Kusnetz, Jacob; and Groner, Warren, 4,199,260, Cl. 356-411.000.
Tecumseh Products Company: *See*—
Stuber, Richard A., 4,198,743, Cl. 29-596.000.
Teibow Company Limited: *See*—
Aoki, Yasuhiro, 4,198,977, Cl. 433-136.000.
Teijin Limited: *See*—
Takeshita, Toru; Niki, Takao; Kawashima, Hiroyuki; and Bannai, Kiyoshi, 4,199,577, Cl. 424-236.000.
Teitelbaum, Bernard R., to Bendix Corporation, The. Protective shield for sensing means. 4,199,424, Cl. 204-195.00S.
Teluo, Yambe, to Nippon Air Brake Co., Ltd., The. Brake control valve. 4,199,196, Cl. 303-6.00C.
Ten Elshof, Ronald D.: *See*—
Haworth, Richard G.; and Ten Elshof, Ronald D., 4,198,913, Cl. 108-108.000.
Terada, Kimio: *See*—
Toyoshima, Yasuo; Ito, Tadasu; Maruzeni, Shouji; Yasuda, Nozomi; and Terada, Kimio, 4,199,611, Cl. 426-607.000.
Terao, Shinji; and Kato, Kaneyoshi, to Takeda Chemical Industries, Ltd. Intermediates for the production of quinones. 4,199,531, Cl. 260-607.0AR.
Teraoka, Tsutomu: *See*—
Kamiya, Shunji; Satake, Kunio; Sone, Tomiho; and Teraoka, Tsutomu, 4,199,490, Cl. 260-29.70D.
Terra Tek, Inc.: *See*—
Barker, Lynn M.; and Guest, Randall V., 4,198,870, Cl. 73-799.000.
Power, Dean V., 4,198,953, Cl. 126-428.000.
Terry, Lynn E.; and Schoeppel, Roger J. Power cycles based upon cyclical hydriding and dehydriding of a material. 4,198,827, Cl. 60-649.000.
Tetro, Richard S.; and Browning, Gerald F., to Black Clawson Company, The. Method and apparatus for controlling the braking system for an unwinder. 4,199,118, Cl. 242-75.440.
Texaco Inc.: *See*—
Cole, Edward L.; Estes, John H.; and Suggitt, Robert M., 4,199,328, Cl. 48-213.000.

Texacone Company, The: *See*—
Wheeler, John H., 4,198,789, Cl. 51-289.00R.
Texas Instruments Incorporated: *See*—
Marum, Steven E., 4,199,714, Cl. 323-4.000.
Textron, Inc.: *See*—
Rieth, Kurt A.; and Bert, Stephen F., 4,198,732, Cl. 24-78.000.
Thacher, Wallace L.: *See*—
Roth, Albert B.; and Thacher, Wallace L., 4,198,820, Cl. 60-369.000.
Thagard Technology Company: *See*—
Matovich, Edwin, 4,199,545, Cl. 422-112.000.
Thalhamer, Arnold G., to United States of America, Navy. Pneumatic valve. 4,199,006, Cl. 137-599.000.
Thevenin, Jean-Claude P. H. P.: *See*—
Raffy, Pierre M.; Andre, Pierre A.; Girault, Jean-Pierre Y. B.; Richter, Gerhard; and Thevenin, Jean-Claude P. H. P., 4,199,295, Cl. 415-115.000.
Thiebaut, Albert J.; and Boell, Maurice. Welding-devices for operating in exiguous spaces. 4,199,673, Cl. 219-60.00A.
Thoma, Paul E., to Johnson Controls, Inc. Thermal energy storage apparatus. 4,199,021, Cl. 165-1.000.
Thompson, Donald A., to General Electric Company. Cutting and drilling apparatus with threadably attached compacts. 4,199,035, Cl. 175-410.000.
Thompson, James D. Ribbed fiber panel and means and method of manufacture. 4,199,394, Cl. 156-461.000.
Thomson-CSF: *See*—
Huignard, Jean P.; and Lehureau, Jean-Claude, 4,199,783, Cl. 358-132.000.
Thomson, Lois J., trustees of the estate of Roy M. Magnuson: *See*—
Green, Chester, 4,199,055, Cl. 198-773.000.
Thurmond, Carl D.: *See*—
Bethea, Clyde G.; Levine, Barry F.; Lynch, Robert T.; and Thurmond, Carl D., 4,199,698, Cl. 307-425.000.
Tidd, Leon E.; Scott, Alan B.; Madey, Julius M. J.; and Collins, Carter C., to Smith-Kettlewell Eye Research Foundation. Optical intensity meter. 4,199,261, Cl. 356-448.000.
Tieszen, Dale O.: *See*—
Blackwell, Jennings P.; and Tieszen, Dale O., 4,199,321, Cl. 8-168.00R.
Tilley, Leslie J.: *See*—
Wilson, Raymond L.; and Tilley, Leslie J., 4,199,255, Cl. 356-72.000.
Timms, Donald G., to International Synthetic Rubber Co. Ltd., The. Olefin polymerization. 4,199,473, Cl. 252-429.00C.
Tjaden, Garold S.: *See*—
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,199,811, Cl. 364-200.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Itoh, Takuji; Sakurada, Satoshi; and Tagaya, Nobuaki, 4,199,555, Cl. 423-239.000.
Tokico Ltd.: *See*—
Sakazume, Takeshi, 4,198,825, Cl. 60-594.000.
Toko, Inc.: *See*—
Naokawa, Toyoziro, 4,199,725, Cl. 455-212.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Akiyama, Junetsu; Fuchida, Takayoshi; Taya, Akira; Nagafuchi, Kazunori; Kohmoto, Kohtaro; and Kobuya, Tomohiko, 4,199,707, Cl. 313-487.000.
Takigawa, Tadahiro, 4,199,689, Cl. 250-492.00A.
Tokyo Shibaura Electric Co., Inc.: *See*—
Suzuki, Kenji, 4,198,986, Cl. 128-659.000.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Ichimi, Akira, 4,199,757, Cl. 340-750.000.
Kusumi, Jiro, 4,199,797, Cl. 361-56.000.
Morita, Hiroshi; Miura, Tadao; and Washida, Hiroshi, 4,199,230, Cl. 350-357.000.
Natori, Kenji; and Masuoka, Fujio, 4,199,772, Cl. 357-23.000.
Tanaka, Shikei; Matsui, Kunihiko; and Kobayashi, Tetsuji, 4,199,696, Cl. 307-309.000.
Tomari, Hitomi: *See*—
Inayoshi, Akio; Tomari, Hitomi; Nagatoshi, Kikuo; and Hata, Yasuo, 4,199,491, Cl. 260-31.20R.
Tomasini, Gianni, to Secunda AG fur Vermietung Von Wirtschaftsgutern. Dispenser-container brush for paste material. 4,199,270, Cl. 401-183.000.
Tomita, Shuzo. Portable container for fish. 4,198,776, Cl. 43-56.000.
Tomozawa, Atsushi: *See*—
Dill, George D.; Tomozawa, Atsushi; Fillion, James R.; Ali, Mian Z.; Burwell, Clyde E.; Warner, Brady H., Jr.; and Jones, Richard W., 4,199,660, Cl. 370-50.000.
Toms River Chemical Corporation: *See*—
Stingl, Hans A., 4,199,318, Cl. 8-41.00B.
Toppan Printing Co., Ltd.: *See*—
Watanabe, Tadao, 4,199,109, Cl. 241-14.000.
Topping, John A.; and Mayer, Peter, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Method of forming corrosion-resistant glassceramic-to-metal seals. 4,199,340, Cl. 65-32.000.
Totino, Peter J.: *See*—
Peterson, Wesley R.; Sedlatschek, Robert; Transue, James A.; and Totino, Peter J., 4,198,915, Cl. 112-225.000.
Tournier, Herve: *See*—
Regnault, Alain; Sachetto, Jean-Pierre; Tournier, Herve; Hamm, Thomas; and Armanet, Jean-Michel, 4,199,371, Cl. 127-37.000.
Toyama Chemical Company, Limited: *See*—
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,199,566, Cl. 424-114.000.
Toyama, Jinichi: *See*—
Horiuchi, Michimasa; Ibamoto, Masahiko; and Toyama, Jinichi, 4,199,711, Cl. 318-139.000.
Toyo Ink Manufacturing Co., Ltd.: *See*—
Kaiho, Keisuke; Yoshida, Risaburo; Ide, Yusaku; and Hirose, Takeshi, 4,199,548, Cl. 422-305.000.
Kokumai, Jun; Otsuki, Akira; and Ishibashi, Tadashi, 4,199,622, Cl. 427-239.000.
Toyoda, Atsushi: *See*—
Aono, Syunji; and Toyoda, Atsushi, 4,199,641, Cl. 428-213.000.
Toyoshima, Yasuo; Ito, Tadasu; Maruzeni, Shouji; Yasuda, Nozomi; and Terada, Kimio, to Asahi Denka Kogyo K.K. Cacao butter substitute. 4,199,611, Cl. 426-607.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Fujita, Tomio; and Ueda, Hideyuki, 4,198,817, Cl. 60-319.000.
Hasegawa, Yutaka; and Hirakata, Koichi, 4,198,816, Cl. 60-305.000.
Ishida, Yasuhiko, 4,198,940, Cl. 123-119.00A.
Kobayashi, Fumiaki, 4,199,187, Cl. 296-24.00R.
Maeda, Yorishige, 4,199,202, Cl. 308-23.000.
Nogami, Tomoyuki; and Fujii, Takashi, 4,198,824, Cl. 60-535.000.
Tracy, Henry J.; Holt, David E.; and Tracy, Janet E., to Geonautics, Inc. Method for making a multi-ply continuous filament ballistic helmet. 4,199,388, Cl. 156-166.000.
Tracy, Janet E.: *See*—
Tracy, Henry J.; Holt, David E.; and Tracy, Janet E., 4,199,388, Cl. 156-166.000.
Trahan, Joseph O.: *See*—
Evans, Orde R.; Rhodes, William D.; and Trahan, Joseph O., 4,198,919, Cl. 114-219.000.
Transaction Management, Inc.: *See*—
Hunter, Alexander, 4,199,795, Cl. 360-93.000.
Transue, James A.: *See*—
Peterson, Wesley R.; Sedlatschek, Robert; Transue, James A.; and Totino, Peter J., 4,198,915, Cl. 112-225.000.
Travis, Charles F. Compressed wood implement handles and method of making. 4,199,632, Cl. 428-54.000.
Trio Kabushiki Kaisha: *See*—
Okuma, Tatsuhiko, 4,199,732, Cl. 330-267.000.
Trott, Donald E. Automatic coupling and decoupling apparatus. 4,199,210, Cl. 339-96.000.
Trotta, Robert A., to Gillette Company, The. All plastic swivel head razor handle. 4,198,746, Cl. 30-47.000.
Trutzschler GmbH & Co. KG: *See*—
Trutzschler, Hans, 4,198,730, Cl. 19-106.00R.
Trutzschler, Hermann, 4,198,725, Cl. 15-306.00B.
Trutzschler, Hans, to Trutzschler GmbH & Co. KG. Web guiding device. 4,198,730, Cl. 19-106.00R.
Trutzschler, Hermann, to Trutzschler GmbH & Co. KG. Cleaning and dust removal machine. 4,198,725, Cl. 15-306.00B.
TRX, Inc.: *See*—
Barry, Richard L., 4,199,745, Cl. 338-320.000.
Trzeciak, Kurt H., to Smith International, Inc. Bearing assembly with adjustable lock nut. 4,199,201, Cl. 308-8.200.
Tsuchiya, Hiroshi: *See*—
Oda, Shinichi; Tsuchiya, Hiroshi; Matsushita, Takao; and Kuroda, Takio, 4,199,619, Cl. 427-150.000.
Tsujikura, Takashi, to Japan Steel Works Ltd., The. Line break detector. 4,198,855, Cl. 73-40.50R.
Tsujimura, Katsuhito, to Sony Corporation. Video special effects generator. 4,199,788, Cl. 358-183.000.
Tu, Nghiem H.: *See*—
Grange, Jean-Claude C.; Hernandez, Philippe; Reynes, Daniel F.; Suzzoni, Jean-Pierre L.; and Tu, Nghiem H., 4,199,664, Cl. 179-18.0FA.
Tubbs, Henry, to Rolls-Royce Limited. Shroud ring aerofoil capture. 4,199,300, Cl. 415-9.000.
Tullis, Barclay J.: *See*—
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Uchiyama, Takashi; Suzuki, Ryoichi; Ito, Fumio; Nagasaka, Wataru; Okuno, Youichi; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Camera. 4,199,239, Cl. 354-86.000.
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Uesugi, Kyozo; and Tanaka, Osamu, to Minolta Camera Kabushiki Kaisha. Shock resistant lens device with zoom and macrofocusing controls. 4,199,227, Cl. 350-187.000.
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UMC Electronics Co.: *See*—
Corey, Lawrence G., 4,199,791, Cl. 360-69.000.
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Sze, Morgan C.; Bennett, Thomas M.; and Unger, Harold, 4,199,434, Cl. 208-40.000.
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Brandle, Charles D., Jr.; and Hassell, John B., Jr., 4,199,396, Cl. 156-617.0SP.
Cosby, Lowell A.; Fiato, Rocco A.; and Vidal, Jose L., 4,199,520, Cl. 260-429.00R.
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Moody, George W.; Wilson, John L.; and Salter, Stephen H., 4,198,821, Cl. 60-398.000.
U.S. Industries, Inc.: *See*—
Kimberley, Walter R., 4,199,051, Cl. 198-482.000.
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Huling, Don W., 4,198,877, Cl. 74-501.00R.
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Paukune, Arthur J., 4,199,175, Cl. 285-405.000.
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MacPherson, Ronald W.; Ethier, J. Clement; and Gravel, J. A. Maurice, 4,198,767, Cl. 35-25.000.
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Thalhamer, Arnold G., 4,199,006, Cl. 137-599.000.
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Ladell, Joshua, 4,199,678, Cl. 250-272.000.
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Meijer, Roelf J., 4,198,954, Cl. 126-425.000.
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van Gils, Johannes A. A., 4,199,378, Cl. 148-1.500.
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Golas, Eugene A.; Sech, William A.; and Singh, Shri N., 4,199,087, Cl. 222-603.000.
Gwilt, Charles W., 4,198,922, Cl. 118-63.000.
Mayernik, Andrew B., 4,198,869, Cl. 73-709.000.
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Noiles, Douglas G., 4,198,971, Cl. 128-214.00C.
University of California, The Regents of the: *See*—
Morse, Daniel E., 4,198,926, Cl. 119-4.000.
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Benson, Sidney W., 4,199,533, Cl. 585-500.000.
Wittry, David B., 4,199,383, Cl. 148-174.000.
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Janata, Jiri, 4,198,851, Cl. 73-23.000.
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Wohrle, Rudolf; Unterstab, Roland; and Kober, Herbert, 4,199,135, Cl. 269-100.000.
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Antos, George J., 4,199,438, Cl. 208-139.000.
Gatsis, John G., 4,199,439, Cl. 208-215.000.
Shum, Ming S., 4,199,414, Cl. 204-15.000.
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Claxton, Gerald L., 4,198,801, Cl. 56-1.000.
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Muller, Friedrich; Kummerhoff, Gerhard; and Uphues, Ewald, 4,199,117, Cl. 242-75.200.
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Hoeksema, Herman, 4,199,507, Cl. 548-218.000.
Moon, Malcolm W.; and Rohrstaff, Diane M., 4,199,583, Cl. 424-251.000.
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Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Matveev, Vladimir A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; Mebel, Vladimir S.; Pravednikov, Erik V.; Rabinovich, Efim M.; and Ushakov, Valery K., 4,198,841, Cl. 72-224.000.
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Watts, Norman H.; Weatherall, Philip; and Hind, Robert D., 4,199,085, Cl. 222-600.000.
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Kutscher, Horst; and Zahs, Gernot, 4,199,350, Cl. 75-46.000.
Valenta, Zdenek, to Hoffmann-La Roche Inc. 14β-Hydroxyandrostanes. 4,199,530, Cl. 260-586.00C.
Vamvakas, Michael, to Niagara Bottle Washer Manufacturing Co. Bottle unscrambler and loader. 4,199,049, Cl. 198-408.000.
Van DeMotter, Charles P. Dressing device for wheels or the like. 4,198,950, Cl. 125-11.0TP.
van den Boom, Johannes; Salwesky, Gert; Godel, Frank-Uwe; and Leitner, Wilfried, to Audi NSU Auto Union Aktiengesellschaft. Vibration absorbing elastomeric mount with hydraulic damping. 4,199,128, Cl. 248-562.000.
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Vanderpool, Clarence D., to GTE Sylvania Incorporated. Coated phosphors and articles employing same. 4,199,617, Cl. 427-64.000.
Vanderpool, James L., to Monarch Marking Systems, Inc. Record decoding system and method utilizing logarithmic techniques. 4,199,677, Cl. 235-463.000.
van Gils, Johannes A. A., to U.S. Philips Corporation. Method of manufacturing a semiconductor device and semiconductor device manufactured while using such a method. 4,199,378, Cl. 148-1.500.
Van Gundy, Joe F., Jr. Augering accessory for backhoe or the like. 4,199,033, Cl. 173-27.000.
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van Wersch, Hubert M. A.; Herrling, Siegfried; and Muckter, Heinrich, to Grunenthal GmbH. Diazaborines and drug compositions. 4,199,573, Cl. 424-185.000.
Van Zeeland, Donald L., to Eaton Corporation. Terminal convertible alternating current switch. 4,199,694, Cl. 307-252.00J.
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Zimmet, Hans, 4,199,251, Cl. 355-64.000.
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Skiera, Heinz, 4,198,908, Cl. 101-217.000.
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Vegezzi, Davide. Method and composition for the therapy of cerebral circulatory diseases. 4,199,585, Cl. 424-262.000.

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Baumgartner, Friedrich; Fernow, Karl H.; Waisnix, Franz; Weiss, Franz; and Zach, Werner, 4,199,108, Cl. 239-662.000.
Venne, Norbert E.: *See*—
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Verachtert, Thomas A., to UOP Inc. Trace acid removal in the pretreatment of petroleum distillate. 4,199,440, Cl. 208-230.000.
Vermeulen, Dirk J. Photographic enlarging exposure meters. 4,199,252, Cl. 355-68.000.
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Szadkowski, Stanislav, 4,199,086, Cl. 222-600.000.
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Iwahara, Makoto, 4,199,658, Cl. 179-1.00G.
Wada, Yoshiyo; Goto, Kunio; and Kinjo, Hisao, 4,199,782, Cl. 455-129.000.
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Vigo, Tyrone L.: *See*—
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Villavicencio, Eduardo J., to Process Evaluation & Development Corp. Method for preparing bagasse dissolving pulps and producing rayon having a degree of polymerization of at least 800 therefrom. 4,199,399, Cl. 162-85.000.
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Dulout, Charles; Peyrouset, Andre; Panaris, Rene; Hannoun, Claude; and Vincent, Jean, 4,199,450, Cl. 210-31.00C.
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Hughes, Donald L.; Doty, Jack A.; and Vinson, Charles B., 4,199,610, Cl. 426-590.000.
Virag, Robert A., to Baxter Travenol Laboratories, Inc. Suction-operated nebulizer. 4,198,969, Cl. 128-200.210.
Voegelin, Heinrich, to Fritz Buser AG Maschinenfabrik. Device for fabricating thin-walled metal cylinders. 4,199,426, Cl. 204-212.000.
Vogt, Carl L., to Coin Acceptors, Inc. Coin-sensing assembly. 4,199,669, Cl. 200-52.00R.
Volkswagenwerk Aktiengesellschaft: *See*—
Streck, Fritz; Paprotny, Peter; and Brager, Gerhard, 4,199,294, Cl. 414-739.000.
Von Drasek, Richard J.: *See*—
Johnston, William D.; Von Drasek, Richard J.; and Bull, Warren J., III, 4,199,062, Cl. 206-525.000.
von Herrmann, Pieter J.; and Williams, Ronald S., to General Electric Company. Method for monitoring and controlling the operation of a dual platen press. 4,199,539, Cl. 264-0.500.
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de Munck, Eduard H. L., 4,199,158, Cl. 277-205.000.
Vsesojuzny Nauchno-Issledovatelsky Institut Po Razrabotke Nerazrushajuschikh Metodov I Sredstv Knotrolya Kachestva Materialov"-VNIINK": *See*—
Birjukov, Sergei B.; Gavrev, Valery S.; Goncharuk, Jury M.; Savitsky, Alexandr V.; and Lonchak, Viktor A., 4,198,866, Cl. 73-613.000.
Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Matveev, Vladimir A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; Mebel, Vladimir S.; Pravednikov, Erik V.; Rabinovich, Efim M.; and Ushakov, Valery K. Roll mill stand. 4,198,841, Cl. 72-224.000.
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Riedl, Franz, 4,199,271, Cl. 404-113.000.
Wacks, Harvey H.; and Sarrach, Donald J., to Energy Conversion Devices, Inc. Dry-process imaging film and method. 4,199,615, Cl. 427-43.100.
Wada, Hideo; and Morita, Izuru, to Caterpillar Mitsubishi Ltd. Relief and make-up valve assembly. 4,199,004, Cl. 137-493.000.
Wada, Yoshiyo; Goto, Kunio; and Kinjo, Hisao, to Victor Company of Japan, Limited. Stylus for reproducing capacitive videodisc. 4,199,782, Cl. 455-129.000.
Wahl, Richard E.; King, John E.; Becket, William C.; and Gannaway, Thomas W., to Singer Company, The. Electronics assembly evaluator. 4,198,768, Cl. 35-29.00R.
Waisnix, Franz: *See*—
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Mues, Volker; Behrenz, Wolfgang; Rauleder, Gebhard; and Waldmann, Helmut, 4,199,593, Cl. 424-282.000.
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Wallace, Jerry L. Tool to install elbow joint and clamp. 4,198,738, Cl. 29-268.000.
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Walon, Raoul G. P., to CPC International Inc. Process for preparing maltose-containing starch hydrolyzate and crystallization of maltose therefrom. 4,199,372, Cl. 127-40.000.
Walzer, Michael, to Feldmann Chemie. Composition and method for cleaning drinking water tanks. 4,199,469, Cl. 252-146.000.
Wang, Samuel S.; Lewellyn, Morris E.; and Smith, Eugene L., Jr., to American Cyanamid Company. Process for recovery of fine coal. 4,199,065, Cl. 209-166.000.
Ward, Terence J., to John Wyeth & Brother Limited. Piperidino ureas and thioureas. 4,199,590, Cl. 424-267.000.
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Hughes, Richrd M.; and Warnecke, Heinz, 4,199,369, Cl. 106-238.000.
Warner, Brady H., Jr.: *See*—
Dill, George D.; Tomozawa, Atsushi; Fillion, James R.; Ali, Mian Z.; Burwell, Clyde E.; Warner, Brady H., Jr.; and Jones, Richard W., 4,199,660, Cl. 370-50.000.
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Babson, Arthur L.; and Turner, James E., 4,199,502, Cl. 260-121.000.
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Ivens, Cyril; and Watson, John C., 4,199,044, Cl. 188-218.0XL.
Watteredge-Uniflex, Inc.: *See*—
Talley, Lawrence M., 4,199,653, Cl. 174-15.0WF.
Watts, Norman H.; Weatherall, Philip; and Hind, Robert D., to USS Engineers & Consultants, Inc. Sliding gate valve. 4,199,085, Cl. 222-600.000.
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Weiner, Peter D.; and Calhoun, Charles W., 4,199,032, Cl. 173-12.000.
Weber, Christopher M., to CBS Inc. Circuit for simulating sounds of percussive instruments. 4,198,891, Cl. 84-1.030.
Weber, Heinz P.; Voumard, Claude; and Salathe, Rene P., to Institut fur Angewandte Physik der Universtitat Bern. Laser transmitting and receiving device. 4,199,226, Cl. 350-157.000.
Weber, Karl-Heinz; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., to Boehringer Ingelheim GmbH. 6-Phenyl-4H-s-triazolo-[3,4c]-thieno-[2,3e]-1,4-diazepines and salts thereof. 4,199,588, Cl. 424-267.000.
Weber, Morris; and Jaehnke, Edgar M., to Hughes Aircraft Company. Tripod leveling mechanization. 4,199,123, Cl. 248-168.000.
Webre, Rodney F. A., Jr.; and Dinger, Oris H., Jr., to TBW Industries, Inc. Trailer for skid mounted tanks. 4,199,298, Cl. 414-458.000.
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Weder, Erwin H.; and Weder, Donald E., 4,199,627, Cl. 428-7.000.
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Wee, Maria L. S.: *See*—
Novosel, Gerald W.; Gilbert, Lawrence A.; Wee, Maria L. S.; and Mueller, Frank J., 4,199,467, Cl. 252-103.000.
Weigl, John W.; and Brynko, Carl, to Xerox Corporation. Photographic screen stencil printing process. 4,199,359, Cl. 430-308.000.
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Weiner, Peter D.; and Calhoun, Charles W., to Weatherford/Lamb, Inc. Apparatus for measuring and controlling a force. 4,199,032, Cl. 173-12.000.
Weiss, Franz: *See*—
Baumgartner, Friedrich; Fernow, Karl H.; Waisnix, Franz; Weiss, Franz; and Zach, Werner, 4,199,108, Cl. 239-662.000.
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Goodman, Alvin M.; and Weitzel, Charles E., 4,199,773, Cl. 357-23.000.
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Welch, Clark M.: *See*—
Danna, Gary F.; Vigo, Tyrone L.; and Welch, Clark M., 4,199,322, Cl. 8-186.000.
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Krohn, Dennis G.; and Wellauer, John C., 4,199,332, Cl. 55-191.000.
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rial information for a facsimile transmission system. 4,199,784, Cl. 358-296.000.

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Welter, Thomas N. H.: *See*—
Reuter, Rene F.; and Welter, Thomas N. H., 4,198,806, Cl. 57-125.000.

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Werner, Peter: *See*—
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Goodson, Sam M., 4,198,836, Cl. 68-205.00R.

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Sherman, Charles J., 4,199,408, Cl. 204-15.000.

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Pekarcik, John T.; and Mazur, Richard J., 4,199,195, Cl. 303-3.000.

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Wickham, David J., 4,199,198, Cl. 303-36.000.

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Daugherty, Roger H.; Jones, Warren W.; and Swensrud, Roger L., 4,199,700, Cl. 310-71.000.
Jones, Charles H.; and Gilmour, George A., 4,199,746, Cl. 367-135.000.
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Wheeler, John H., to Texacone Company, The. Sleeve assembly. 4,198,789, Cl. 51-289.00R.

Wheeler, Ronald H.; and Batruch, John R., to Eraser Co., Inc., The. Apparatus for forming leads. 4,198,741, Cl. 29-566.300.

Whike, Alan S.: *See*—
Ellison, Kenneth; and Whike, Alan S., 4,198,764, Cl. 34-32.000.
Ellison, Kenneth; and Whike, Alan S., 4,198,951, Cl. 126-19.00R.

Whirlpool Corporation: *See*—
Barnard, Walter C.; and Venne, Norbert E., 4,198,831, Cl. 62-320.000.
Connor, Ralph F., 4,199,309, Cl. 418-270.000.

White, Bruce D. Electric automobile. 4,199,037, Cl. 180-65.00C.

White Motor Corporation of Canada Limited: *See*—
Quick, Graeme R.; and Mills, William M., 4,198,803, Cl. 56-296.000.

White, Philip E.; and Blumke, Eugene G., to Control Data Corporation. Method and apparatus for eliminating conflicts on a communication channel. 4,199,661, Cl. 370-91.000.

Whitfield, Larry R.: *See*—
Miller, Scott; and Whitfield, Larry R., 4,199,747, Cl. 340-74.000.

Whyte, Ian A.; and Cook, Richard F., to Westinghouse Electric Corp. Multichannel radio communication system for automated power line distribution networks. 4,199,761, Cl. 340-695.000.

Wichman, Paul E.: *See*—
Bramow, Scott B.; Laakaniemi, Richard N.; and Wichman, Paul E., 4,199,101, Cl. 236-13.000.

Wickham, David J., to Westinghouse Brake and Signal Co. Ltd. Vehicle braking control apparatus. 4,199,198, Cl. 303-36.000.

Wiebe, Donald, to A. Stucki Company. Snubber. 4,198,911, Cl. 105-197.0DH.

Wiedeking, Elmar: *See*—
Siess, Hans; Wiedeking, Elmar; and Sigle, Werner, 4,198,849, Cl. 73-1.00F.

Wiegers, Wilhelmus J.: *See*—
Hall, John B.; Wiegers, Wilhelmus J.; Hill, Ira D.; Novak, Robert M.; and Schmitt, Frederick L., 4,199,481, Cl. 252-522.00R.

Wielinger, Hans; and Rittersdorf, Walter, to Boehringer Mannheim GmbH. Device for the uniform dosing of faecal matter for component detection. 4,199,550, Cl. 422-58.000.

Wiessner, Willi: *See*—
Schlapp, Werner; and Wiessner, Willi, 4,199,248, Cl. 354-286.000.

Wilhelm, Donald F.; and Jones, William J., Jr., to Helm Instrument Co., Inc. Solid state indicating apparatus. 4,199,758, Cl. 340-753.000.

Wilhelm Schimmel Pianofortefabrik GmbH: *See*—
Schimmel, Nikolaus, 4,198,893, Cl. 84-255.000.

Wilkerson, James D., Jr.: *See*—
Cooke, Ralph C.; and Wilkerson, James D., Jr., 4,199,205, Cl. 312-214.000.

Wilkes, John B., to Chevron Research Company. Hydrogenation catalyst. 4,199,479, Cl. 252-457.000.

Williams, Henry L., to Geolograph Company, The. Double punch inclinometer. 4,198,760, Cl. 33-311.000.

Williams, Ronald S.: *See*—
von Herrmann, Pieter J.; and Williams, Ronald S., 4,199,539, Cl. 264-0.500.

Williams, William A., Jr., to Wilson Research & Development, Inc. Julienne cutter tool. 4,198,887, Cl. 83-356.300.

Williams, William F.: *See*—
United States of America, National Aeronautics and Space Administration; Williams, William F.; and Cohn, Seymour B., 4,199,764, Cl. 343-786.000.

Wilson, Harold R.: *See*—
Haworth, Richard G.; Saylor, Charles J.; and Wilson, Harold R., 4,199,206, Cl. 339-4.000.

Wilson, John E.: *See*—
Hengen, Edward J.; and Wilson, John E., 4,198,802, Cl. 56-14.600.

Wilson, John L.: *See*—
Moody, George W.; Wilson, John L.; and Salter, Stephen H., 4,198,821, Cl. 60-398.000.

Wilson, John R.: *See*—
Shariff, Sadiq A.; Wilson, John R.; Bharteey, Brij M.; and Rowe, Neal E., 4,199,655, Cl. 174-72.00B.

Wilson, Lowell A., to Bonar & Bemis, Ltd. Automatic wicketted bag loader and method of loading. 4,198,800, Cl. 53-452.000.

Wilson, Raymond L.; and Tilley, Leslie J., to Edward Wilson and Son Ltd. Apparatus for use in grading hides, skins, pelts and the like. 4,199,255, Cl. 356-72.000.

Wilson Research & Development, Inc.: *See*—
Williams, William A., Jr., 4,198,887, Cl. 83-356.300.

Wilt, Charles R., Jr.; and Schauermann, Floyd L., to Salem Corporation. Method of operating an incinerator. 4,199,549, Cl. 423-210.000.

Winans, Esther D.: *See*—
Ryer, Jack; Brois, Stanley; and Winans, Esther D., 4,199,463, Cl. 252-51.50A.

Windmoller & Holscher: *See*—
Achelpohl, Fritz, 4,199,184, Cl. 294-106.000.

Winiasz, Michael E.; and Long, James M., to A-T-O Inc. Velocity compensator assembly in a horizontal article conveyor system. 4,199,291, Cl. 414-416.000.

Wirsbinski, James L., to Berg Equipment Corporation. Door opening mechanism for feed conveyor. 4,199,054, Cl. 198-735.000.

Wirtanen, Theodore E.; and Hitchcock, Ronald M., to United States of America, Air Force. Optical plummet azimuth reference assembly. 4,198,759, Cl. 33-281.000.

Wittry, David B., to University of Southern California. Method of making a photovoltaic cell employing a PbO-SnO heterojunction. 4,199,383, Cl. 148-174.000.

Woeller, Fritz H.: *See*—
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Woessner, Roger J.: *See*—
Heavner, Paul W.; Woessner, Roger J.; and Clifford, Susan E., 4,198,974, Cl. 128-215.000.

Wohrle, Rudolf; Unterstab, Roland; and Kober, Herbert, to Alois Kober KG, Firma. Foldable workbench. 4,199,135, Cl. 269-100.000.

Wolf, Franz-Josef. Coil capacitor. 4,199,801, Cl. 361-272.000.

Wolf, Johann, to Johann Wolf Gesellschaft m.b.H. KG. Silo installation. 4,199,281, Cl. 406-93.000.

Wolf, Tobin: *See*—
Nelson, James; Sainato, Robert J.; and Wolf, Tobin, 4,199,163, Cl. 280-22.000.

Wood, Jonathan R.; Pickin, George A.; and Harvey, David S., to British Steel Corporation. Production of sponge iron. 4,199,349, Cl. 75-29.000.

Woodfield, Christopher: *See*—
Farmer, Derek; and Woodfield, Christopher, 4,198,858, Cl. 73-146.000.

Woods, Lee O., to General Electric Company. Switch device and method of making. 4,199,740, Cl. 335-202.000.

Woolcock, Graeme E. Apparatus for reducing the wind resistance imposed on a prime mover-trailer combination. 4,199,185, Cl. 296-1.00S.

Worden, Donald G., to Stainless Steel Fabricating, Inc. Antijamming mechanism for conveyor. 4,198,902, Cl. 99-535.000.

World Energy Systems: *See*—
Rose, Leslie C.; and Hamrick, Joseph T., 4,199,024, Cl. 166-59.000.

Worschieschek, Rainer: *See*—
Landgraf, Hermann; and Worschieschek, Rainer, 4,198,755, Cl. 433-126.000.

Worthington S.p.A.: *See*—
Fumagalli, Enos, 4,199,002, Cl. 137-340.000.

Worz, Paul, to Robert Bosch GmbH. Composite electronic ignition system structure. 4,198,943, Cl. 123-148.00D.

Wostl, Wolfgang J.; Segal, Jack S.; Roach, Thomas L.; and Moore, Robert A., to Atlantic Richfield Company. Credit card automated system for vehicle service stations. 4,199,100, Cl. 235-381.000.

Wright, John F.: *See*—
Stryjewski, Walter A.; and Wright, John F., 4,199,626, Cl. 427-444.000.

Wrona, Theodore J. Stamping press. 4,198,846, Cl. 72-450.000.

Wu, Shy-Hsien, to Corning Glass Works. Method for making hot-pressed thermoplastic elements for glass-plastic lenses. 4,199,538, Cl. 264-1.000.

WWG Industries Inc.: *See*—
Chambley, Phillip W.; and Norris, Alan H., 4,198,735, Cl. 28-218.000.

Wydeven, Theodore J.: *See*—
Johnson, Catherine C.; and Wydeven, Theodore J., 4,199,448, Cl. 210-23.00H.

Xerox Corporation: *See*—
Blossey, Daniel F.; Deshpande, Narayan V.; Faucz, Eugene C.; Stange, Klaus K.; and Swackhamer, Stanley B., 4,199,766, Cl. 346-74.100.
Fischbeck, Kenneth H., 4,199,769, Cl. 346-140.00R.
Schnarr, Marcus M., 4,199,770, Cl. 346-140.00R.
Weigl, John W.; and Brynko, Carl, 4,199,359, Cl. 430-308.000.
Ziolo, Ronald F., 4,199,614, Cl. 430-111.000.

Yabuki, Shoichi: *See*—
Oshima, Masanao; Komoto, Mikihisa; Yabuki, Shoichi; and Inokawa, Tsuneo, 4,198,917, Cl. 114-42.000.

Yamagishi, Michio; Mizoue, Kazutoshi; Mizutani, Taku; Hara, Hiroshi; Omura, Sadafumi; Seto, Haruo; and Otake, Noboru, to Taisho Pharmaceutical Co., Ltd. Novel lonomycin derivatives. 4,199,515, Cl. 260-345.70R.

Yamaguchi, Takaaki: *See*—
Ohtsuka, Sadao; and Yamaguchi, Takaaki, 4,199,472, Cl. 252-427.000.

Yamamoto, Hideaki: *See*—
Maruyama, Eiichi; and Yamamoto, Hideaki, 4,199,777, Cl. 357-55.000.

Yamanoi, Noboru, to Maruzen Kabushiki Kaisha. Stapling means. 4,199,095, Cl. 227-125.000.

Yamashita, Akio; Imai, Akihiro; and Hayashi, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Solid state display device. 4,199,229, Cl. 350-357.000.

Yamatsu, Isao: *See*—
Kijima, Shizumasa; Yamatsu, Isao; Inai, Yuichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,199,587, Cl. 424-266.000.

Yanagida, Tuneo: *See*—
Satoh, Ken; and Yanagida, Tuneo, 4,199,792, Cl. 360-74.100.

Yannoni, Nicholas F., to United States of America, Air Force. Portable optical fiber coupling device. 4,199,223, Cl. 350-96.210.

Yasuda, Nozomi: *See*—
Toyoshima, Yasuo; Ito, Tadasu; Maruzeni, Shouji; Yasuda, Nozomi; and Terada, Kimio, 4,199,611, Cl. 426-607.000.

Yasuda, Shinichi; Niwa, Takayasu; and Kurohara, Takayuki, to Koei Chemical Co., Ltd. Material for recovering uranium and method for recovering a uranium solution of high purity and high concentration, using the same. 4,199,470, Cl. 252-184.000.

Yasuda, Takashi: *See*—
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,199,566, Cl. 424-114.000.

Yasui, Tokumasa: *See*—
Masuhara, Toshiaki; Yasui, Tokumasa; Sakai, Yoshio; Nakajima, Joh; Kosa, Yasunobu; Meguro, Satoshi; and Kubo, Masaharu, 4,199,778, Cl. 357-59.000.

Yeagle, Richard J., to General Filters, Inc. Rotary drum humidifier. 4,199,536, Cl. 261-92.000.

Yoshida, Risaburo: *See*—
Kaiho, Keisuke; Yoshida, Risaburo; Ide, Yusaku; and Hirose, Takeshi, 4,199,548, Cl. 422-305.000.

Yoshida, Satoshi; Mizobuchi, Yuzo; Ikeda, Tomoaki; and Iijima, Toshio, to Fuji Photo Film Co., Ltd. Compositions for recording materials. 4,199,357, Cl. 430-270.000.

Yoshida, Takashi; Sakaguchi, Shinji; Katoh, Kazunobu; and Karino, Yukio, to Fuji Photo Film Co., Ltd. Color diffusion transfer process photographic elements. 4,199,362, Cl. 430-218.000.

Yoshida, Takashi: *See*—
Nishizawa, Jun-Ichi; and Yoshida, Takashi, 4,199,771, Cl. 357-22.000.

Yoshihara, Keisuke: *See*—
Kamada, Kazumasa; Kushi, Kenji; Yoshihara, Keisuke; and Nakamoto, Hideo, 4,199,421, Cl. 204-159.220.

Younts, Lester M., Jr. Method and apparatus for draining a building structure. 4,198,794, Cl. 52-169.500.

Yu, Chia-Nien, to Morton-Norwich Products, Inc. 2-(5-p-Chlorophenyl-2-furyl)-5-methyl-1,3,4-oxadiazole. 4,199,508, Cl. 548-143.000.

Yundt, Albert P., to Bard Laboratories, Inc. Amorphous monomolecular surface coatings. 4,199,649, Cl. 428-411.000.

Yvard, Marcel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Document analyzer in particular for a facsimile transmitter. 4,199,789, Cl. 358-294.000.

Zach, Werner: *See*—
Baumgartner, Friedrich; Fernow, Karl H.; Waisnix, Franz; Weiss, Franz; and Zach, Werner, 4,199,108, Cl. 239-662.000.

Zahnradfabrik Friedrichshafen AG.: *See*—
Elser, Dieter, 4,198,898, Cl. 91-375.00A.

Zahs, Gernot: *See*—
Kutscher, Horst; and Zahs, Gernot, 4,199,350, Cl. 75-46.000.

Zaitsev, Gennady E.: *See*—
Lifentsev, Oleg M.; Melnikov, Boris N.; Zaitsev, Gennady E.; and Solovieva, Tamara E., 4,199,319, Cl. 8-116.00R.

Zanobi, Antonio: *See*—
Mantovani, Elvio; Palladino, Nicola; and Zanobi, Antonio, 4,199,478, Cl. 252-455.00Z.

Zante, Hubert A.: *See*—
Lamic, Jackie G.; Pascal, Pierre B.; Schilling, Michel E.; and Zante, Hubert A., 4,198,896, Cl. 89-1.818.

Zappelli, Piergiorgio; Rossodivita, Antonio; Pappa, Rosario; and Re, Luciano, to Snamprogetti S.p.A. Macromolecularized adenine derivatives. 4,199,498, Cl. 260-112.50R.

Zardi, Umberto; and Lagana', Vincenzo, to Snamprogetti S.p.A. Liquid distributor for thin-film, tube-bundle apparatus. 4,199,537, Cl. 261-112.000.

Zechnall, Martin: *See*—
Kiencke, Uwe; and Zechnall, Martin, 4,198,882, Cl. 74-866.000.
Klotzner, Winfried; Daumer, Rolf; Zechnall, Martin; Kiencke, Uwe; and Flaig, Ulrich, 4,199,812, Cl. 364-431.000.

Zegler, Sylvester T.: *See*—
Mordarski, Walter J.; and Zegler, Sylvester T., 4,199,404, Cl. 176-66.000.

Zeibig, Anton, to Rosenthal Technik AG. Joint endoprosthesis. 4,198,711, Cl. 3-1.910.

Zenith Radio Corporation: *See*—
Bing, Valentijn B.; and Neis, Donald A., 4,199,706, Cl. 313-481.000.

Zielinski, Richard J.: *See*—
Gilmore, Cecilia; Miller, Donald E.; and Zielinski, Richard J., 4,199,608, Cl. 426-570.000.

Zimmer USA, Inc.: *See*—
Honneffer, Robert W., 4,198,964, Cl. 128-87.00R.

Zimmerman, Richard H.: *See*—
Cherian, Gabriel B.; Scheingold, William S.; and Zimmerman, Richard H., 4,199,209, Cl. 339-59.00M.

Zimmet, Hans, to VEB Pentacon Dresden Kamera- und Kinowerke. Micro-filming apparatus. 4,199,251, Cl. 355-64.000.

Ziolo, Ronald F., to Xerox Corporation. Transparent colored magnetic materials and electrostatographic process. 4,199,614, Cl. 430-111.000.

Zulch, Donald I.; and Brock, Robert, to United States of America, Air Force. System for correlating electronic distance measurement and aerial photography for the extension of geodetic control. 4,199,759, Cl. 343-6.00R.

Zweig, Arnold; and Fischer, Robert G., Jr., to American Cyanamid Company. Process for oxidation of 4-amidotetrahydrobenzo [b]-thiophenes to 7-keto derivatives with cobaltic salts. 4,199,510, Cl. 260-326.00S.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF APRIL, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Engineering Enterprises, Inc.: *See—*
Fox, Fred K., Re. 30,257, Cl. 175-107.000.

Fox, Fred K., to Engineering Enterprises, Inc. Well drilling tool. Re. 30,257, Cl. 175-107.000.

Fuji Photo Film Co., Ltd.: *See—*
Fujita, Susumu, Re. 30,258, Cl. 354-106.000.

Fujita, Susumu, to Fuji Photo Film Co., Ltd. Data recording camera. Re. 30,258, Cl. 354-106.000.

Hoffmann-La Roche Inc.: *See—*
Rosenberger, Michael, Re. 30,260, Cl. 568-824.000.

Honda, Iwao: *See—*
Moriya, Koichi; and Honda, Iwao, Re. 30,259, Cl. 162-167.000.

Japan Carlit Co., Ltd., The: *See—*
Moriya, Koichi; and Honda, Iwao, Re. 30,259, Cl. 162-167.000.

Moriya, Koichi; and Honda, Iwao, to Japan Carlit Co., Ltd., The. Water-soluble thermosetting resins and use thereof. Re. 30,259, Cl. 162-167.000.

Rosenberger, Michael, to Hoffmann-La Roche Inc. 1-(2,6,6-Trimethyl-3-hydroxy-1-cyclohexen-1-yl)-3-methyl-penta-1,4-diene[or 1-yn-4-en]-3-ols. Re. 30,260, Cl. 568-824.000.

LIST OF PLANT PATENTEES

Fleischle, Gerhard, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Greta. 4,522, 4-22-80, Cl. 68.000.

Fleischle, Gerhard, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Ilsa. 4,523, 4-22-80, Cl. 68.000.

Fleischle, Gerhard, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Marna. 4,524, 4-22-80, Cl. 68.000.

Fleischle, Gerhard, to Oglevee Associates, Inc. Distinct variety of Streptocarpus named Olga. 4,525, 4-22-80, Cl. 68.000.

Oglevee Associates, Inc.: *See—*
Fleischle, Gerhard, 4,522, Cl. 68.000.
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LIST OF DESIGN PATENTEES

Action Leathercraft, Inc.: *See—*
Rodstein, Harvey R., 254,757, Cl. D2-400.000.
Rodstein, Harvey R., 254,758, Cl. D2-400.000.
Rodstein, Harvey R., 254,759, Cl. D2-400.000.

Airway Industries, Inc.: *See—*
Davis, Michael, 254,761, Cl. D2-415.000.

Alexandris, Thomas J.: *See—*
Chase, Richard A.; Williams, D. Michael; and Alexandris, Thomas J., 254,795, Cl. D21-65.000.

Arioka, Takanori: *See—*
Kitada, Toyohiko; Iiyama, Kunio; Ito, Kazuyuki; Tamura, Minoru; and Arioka, Takanori, 254,778, Cl. D10-46.000.

Baldwin Piano & Organ Company: *See—*
Edwards, Clyde E., 254,792, Cl. D17-14.000.

Ballantyne, John R., to Superscope, Inc. Loudspeaker grille. 254,786, 4-22-80, Cl. D14-39.000.

Ballard, James W.; and Ballard, Larry R. Roof vent. 254,804, 4-22-80, Cl. D23-153.000.

Ballard, Larry R.: *See—*
Ballard, James W.; and Ballard, Larry R., 254,804, Cl. D23-153.000.

Barr, Josef J. Diamond ring. 254,783, 4-22-80, Cl. D11-36.000.

Benia, Phyllis M., to Screenz Products. Flour sifter or the like. 254,765, 4-22-80, Cl. D7-47.000.

Boldt, Melvin H.; Morrison, Thurber H.; and Stevens, James P., to National Presto Industries, Inc. Pressure cooker regulator. 254,769, 4-22-80, Cl. D7-129.000.

Brown, James N. Bootjack. 254,756, 4-22-80, Cl. D2-378.200.

Buck, Elwood W., Jr., to D G Shelter Products Company. Latching handle for a vent. 254,772, 4-22-80, Cl. D8-302.000.

Celestian, John J. Adjustable sheet metal awning. 254,809, 4-22-80, Cl. D25-57.000.

Chase, Richard A.; Williams, D. Michael; and Alexandris, Thomas J., to Johnson & Johnson. Toy rattle. 254,795, 4-22-80, Cl. D21-65.000.

Christen Incorporated: *See—*
Christen, Louis J., Jr., 254,766, Cl. D7-102.000.
Christen, Louis J., Jr., 254,767, Cl. D7-105.000.
Christen, Louis J., Jr., 254,770, Cl. D7-151.000.

Christen, Louis J., Jr., to Christen Incorporated. Spatula. 254,766, 4-22-80, Cl. D7-102.000.

Christen, Louis J., Jr., to Christen Incorporated. Tongs. 254,767, 4-22-80, Cl. D7-105.000.

Christen, Louis J., Jr., to Christen Incorporated. Fork. 254,770, 4-22-80, Cl. D7-151.000.

Clairol Incorporated: *See—*
MacGregor, Fran, 254,812, Cl. D28-35.000.

Continental Group, Inc., The: *See—*
Mascia, Carmen T.; and Hasegawa, Gary K., 254,777, Cl. D9-217.000.

Crespi, Gabriella. Table. 254,763, 4-22-80, Cl. D6-146.000.

D G Shelter Products Company: *See—*
Buck, Elwood W., Jr., 254,772, Cl. D8-302.000.

Davis, Michael, to Airway Industries, Inc. Pull tab for a slide fastener or the like. 254,761, 4-22-80, Cl. D2-415.000.

Diana, Henry J. Golf club head. 254,800, 4-22-80, Cl. D21-219.000.

Dunlop Limited: *See—*
Sakaki, Nobuyuki, 254,784, Cl. D12-145.000.

Dynabrade, Inc.: *See—*
Fleckenstein, Elwin H., 254,789, Cl. D15-126.000.

Eastman Kodak Company: *See—*
Hansen, David E., 254,791, Cl. D16-06.000.

Edeland, Gunnar. Dental holder for X-ray films. 254,805, 4-22-80, Cl. D24-2.000.

Edwards, Clyde E., to Baldwin Piano & Organ Company. Electric guitar. 254,792, 4-22-80, Cl. D17-14.000.

Edwards, Richard T., to Genpak Corporation. Food container. 254,776, 4-22-80, Cl. D9-183.000.

Ethyl Development Corporation: *See—*
Shortino, Vincent M., 254,774, Cl. D9-143.000.

Falk, Max, to Max Falk Associates, Inc. Jewelry display tray. 254,775, 4-22-80, Cl. D9-171.000.

Fleckenstein, Elwin H., to Dynabrade, Inc. Arm for a belt grinding machine. 254,789, 4-22-80, Cl. D15-126.000.

Florida Pneumatic Manufacturing Corp.: *See—*
Taylor, David P.; and Olander, Donald P., 254,771, Cl. D8-62.000.

Froidh, Tor A.: *See—*
Kvamme, John H.; Widlund, Leif U. R.; Froidh, Tor A.; and Walden, Hans E., 254,807, Cl. D24-50.000.

General Motors Corporation: *See—*
Petlewski, Paul J., 254,760, Cl. D2-408.000.

Genpak Corporation: *See—*
Edwards, Richard T., 254,776, Cl. D9-183.000.

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Hasegawa, Gary K.: *See—*
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Hayes, Jerry R., to L. R. Nelson Corporation. Hose coupling collar. 254,802, 4-22-80, Cl. D23-44.000.

Hayman, Eric R.; Hensel, John C.; and Koch, Ingomar O., to Safeguard Business Systems, Inc. Combined writing board and pad holder. 254,794, 4-22-80, Cl. D19-86.000.
Hensel, John C.: *See*—
Hayman, Eric R.; Hensel, John C.; and Koch, Ingomar O., 254,794, Cl. D19-86.000.
Hilary Page "Sensible" Toys Limited: *See*—
Johnstone, Louis, 254,798, Cl. D21-150.000.
Holm, Harold K. Pressure gauge. 254,781, 4-22-80, Cl. D10-85.000.
Hoover, Dorothy R., to Plakie, Inc. Wall canopy. 254,810, 4-22-80, Cl. D25-57.000.
Iiyama, Kunio: *See*—
Kitada, Toyohiko; Iiyama, Kunio; Ito, Kazuyuki; Tamura, Minoru; and Arioka, Takanori, 254,778, Cl. D10-46.000.
Ito, Kazuyuki: *See*—
Kitada, Toyohiko; Iiyama, Kunio; Ito, Kazuyuki; Tamura, Minoru; and Arioka, Takanori, 254,778, Cl. D10-46.000.
Johnson & Johnson: *See*—
Chase, Richard A.; Williams, D. Michael; and Alexandris, Thomas J., 254,795, Cl. D21-65.000.
Johnstone, Louis, to Hilary Page "Sensible" Toys Limited. Figure toy. 254,798, 4-22-80, Cl. D21-150.000.
Katz, Meyer. Cigarette puncturing article or the like. 254,811, 4-22-80, Cl. D27-51.000.
Keiper Dynavit GmbH & Co.: *See*—
Klaus, Helmut, 254,782, Cl. D10-91.000.
Kitada, Toyohiko; Iiyama, Kunio; Ito, Kazuyuki; Tamura, Minoru; and Arioka, Takanori, to Tokyo Keiki Company Limited. Ultrasonic wave thickness meter. 254,778, 4-22-80, Cl. D10-46.000.
Kitai, Isao; and Yamasaki, Tsutomu, to Sharp Kabushiki Kaisha (Sharp Corp.). Electronic hemadynamometer. 254,806, 4-22-80, Cl. D24-17.000.
Klaus, Helmut, to Keiper Dynavit GmbH & Co. Weighing scale. 254,782, 4-22-80, Cl. D10-91.000.
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CLASSIFICATION OF PATENTS

ISSUED APRIL 22, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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